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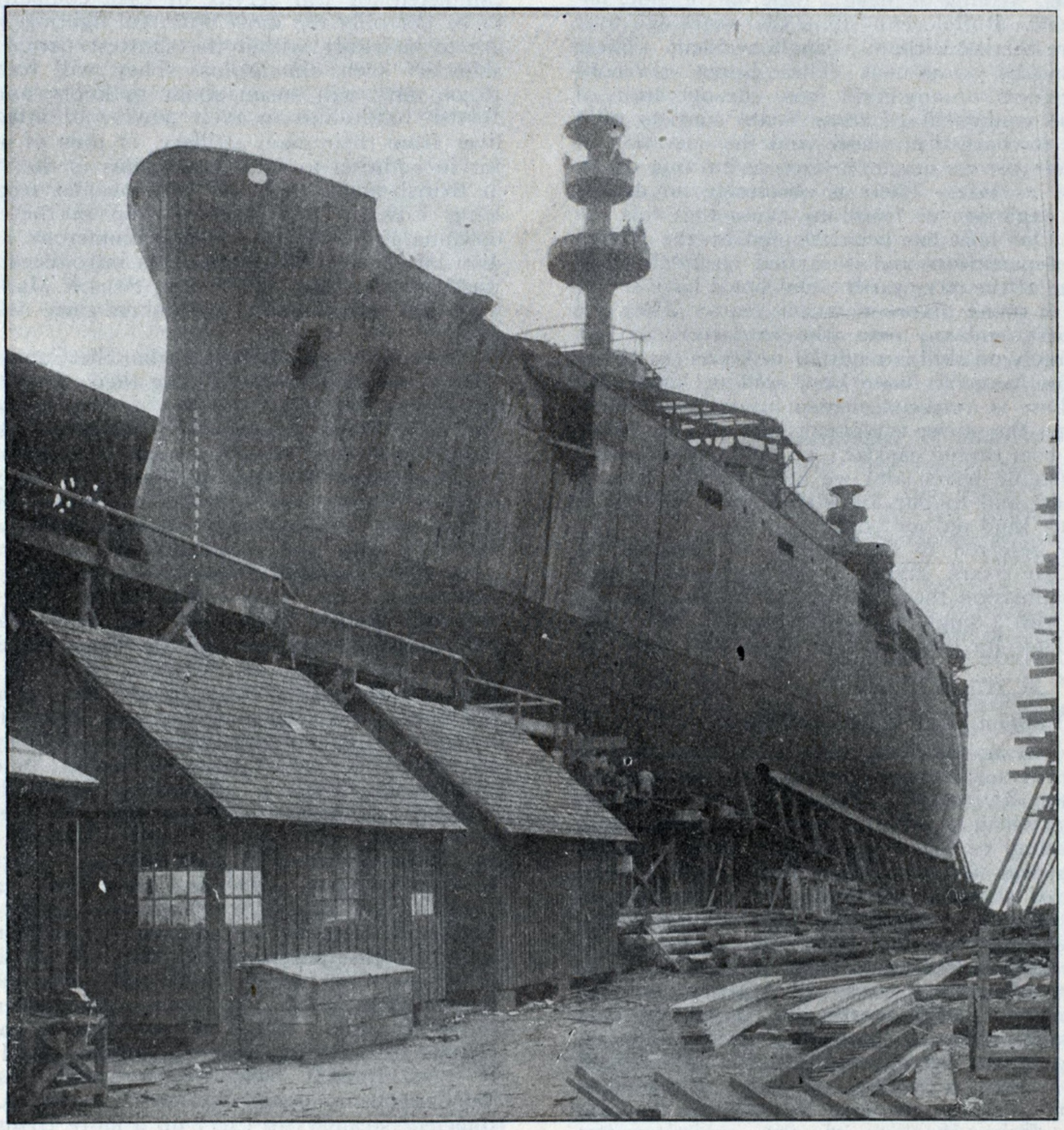
USELESS LEGISLATION.

Can anyone spontaneously call to mind a single accident that has resulted from the use of gasoline launches or motor boats? And yet to hear the arguments of those who favor licensing these useful little craft and compelling them to carry engineers and pilots one would think that the waters of the earth were encumbered with the bodies of their victims. The gasoline launch is the outgrowth of the ceaseless activity of the gentleman amateur. By putting more money into it than he ever hoped to get out he has cleared the pathway for the manufacture of a commercial product. In matters of this kind commerce does not originate; it follows. But it is very quick to perceive a profit when things have got beyond the stage of experimentation. The high-speed launch is the direct result of the intelligent inquiry of the aquatic sportsman. By his money and his brains he has vastly extended the domain of human pleasure—for the motor boat is now quite within the compass of the resources of the ordinary citizen. It has taken twenty years to bring the little craft to a state of comparative perfection; and for every step of its way it has been followed by jealous eyes which have sought to derive a revenue from the practical navigation of them. For the past fifteen years bills have been introduced in congress to compel these little vessels to carry engineers and pilots. Every year the measure has been sidetracked, pigeonholed or defeated, but like Banquo's ghost it rises to haunt the succeeding congress. It comes this time under the escort of Representative Grosvenor, a man whose ripe experience ought to have taught him to lend his energies to better things. The measure provides that all power boats under 15 tons shall carry licensed engineers and pilots and shall be subject to the same regulations as govern the navigation of steam craft. There are thousands of these little boats which would go out of service the moment that measure became a law; there are hundreds of makers of these boats who would virtually be forced to suspend business or who would, at any rate, find their operations seriously curtailed. Its passage would in effect be putting the bridle upon human endeavor and encroaching seriously upon the rights of citizenship. A man has a perfect right to seek his pleasure where he finds it, provided he does no wrong, but this measure says in effect that he shall not possess a motor boat for his own use. The great majority of owners of these little power boats cannot afford to employ a man to run the boat. They derive their pleasure from running it themselves.



Launch of the Protected Cruiser Charleston.

[Building by the Newport News Ship Building & Dry Dock Co., Newport News, Va.

A meeting of the committee on merchant marine and fisheries was held in Washington recently to hear arguments in opposition to it. Among those who addressed the committee were E. F. Du Brul of the National Trades Metal Association, Cincinnati; John J. Amory of the Gas Engine & Power Co., and Charles L. Seabury & Co., Consolidated, Morris Heights, New York; H. R. Sutphen of the Electric Launch Co., Bayonne, N. J.; J. M. Schoonmaker of C. H. Sterlinger & Co., Detroit, Mich., and James Audenried, Buffalo, N. Y.

Mr. Du Brul said that the National Metal Trades Association opposed the bill on the ground that the requirement that such small vessels should conform to the same laws and regulations as big passenger boats was unreasonable and wholly unnecessary. The small launches now equipped with gasoline engines were very simple affairs, easily managed by any intelligent boy, and to require them to submit to inspection and carry licensed engineers and pilots would mean that they could not be operated, and hence could not be manufactured and sold. Such a bill would bear with special hardship upon many fishermen and longshoremen who have abandoned the use of sail boats and have invested their little capital in gasoline launches, which they use on the lakes and rivers in putting out and taking up their nets, in carrying freight up and down shallow rivers where larger boats cannot go, and in making short trips with pleasure parties. While only a small proportion of these launches are maintained solely for hire, nine-tenths of them are hired occasionally, and it would therefore be necessary for each owner to make a long trip every year and pass an inspection and examination in order to secure a license for himself and boat.

Chairman Grosvenor of the committee insisted that the passage of the bill was necessary to prevent accidents, but Mr. Du Brul replied that the danger of accidents in small gasoline boats was no greater than in a sail boat and probably not so great. Such accidents as had occurred in small power boats resulted from leakage or from some other reason which would not be removed or checked by an annual inspection or by a license to the operator, who, of course, could not be required to pass so rigid an examination as would be necessary for an applicant for a steam engineer's license.

Mr. Audenried stated that his company had manufactured gasoline engines for seventeen or eighteen years, and in that time had put out for marine purposes about 4,000 engines, 75 per cent. of which have gone into boats of the class against which this bill is directed. The bulk of these boats, he said, were used by boatmen to go up creeks and little bays to gather truck from farmers and carry it to market. His firm always gave close attention to the question of the competency of parties buying these boats to operate them, because if they were not handled properly the business of building boats and engines would be seriously injured. Chairman Grosvenor at this point read to the committee a letter from Supervising Inspector-General Uhler urging the passage of the bill.

Mr. Amory stated that the Gas Engine & Power Co., whom he represented, were builders of gasoline and steam launches and had also built torpedo and gun boats for the government. He said

he was personally familiar with the boiler proposition, which was the dangerous feature of steam vessels. His company had built about 5,000 small gasoline boats during the past twenty years, but he did not know of a single accident or of the loss of a single life caused by an explosion or by any mishap connected with the machinery. He thought there were about 25,000 of these boats in use today, and congress should be very careful in legislating not to impose a hardship on a very large class of deserving persons. The great mass of owners of these boats, he said, were men who had put all their moderate means into them and were thoroughly familiar with the business or they would not have put their money into it. For a number of years, Mr. Amory said, his company kept a record of mishaps of all kinds on different types of boats, but the percentage of accidents on the gasoline boats was so ridiculously small as compared with those on steam craft that that class was dropped from the records entirely.

Mr. Sutphen spoke as follows in behalf of the electric launch industry, which, he said, was comparatively new in this country:

"We have been building electric launches for twelve years. The first boats of that kind that we built, in 1893, were used at the Chicago exposition, at which time fifty-five launches were in service, and during the exposition over 1,000,000 passengers were carried without a single accident of any kind. These boats were operated the greater part of the time by college students, who during the summer months, wishing to make a little on the side, undertook that work. At the Buffalo exposition two years ago over 600,000 passengers were carried without a single accident. These boats were also operated by young men. There is not on record a fatal accident or accident of any kind from the operation of electric launches. The equipment of these boats consists of a storage battery, which is charged on shore, and the operation of the boat is very simple—just as simple, in fact, as turning on an electric light, and just as safe. There is absolutely no danger from shock or fire or explosion or from any cause that this bill is trying to regulate. Our boat has been adopted by the United States navy and war departments and is carried on battle ships and cruisers and is used at the navy yards. Our boats have superseded steam launches in many places in recent years. They are far safer than sail boats, and any man who can steer can run them in safety. Absolutely no skill is required so far as the motor is concerned, and many launches have been sold to ladies and operated by them. There is a special element of safety in these launches in the fact that the power equipment is invariably below the water line and the boat cannot capsize. I would say, however, that we also build gasoline boats, and we keep careful account of mishaps of all kinds, and to our knowledge there has never been an accident of any kind on our boats."

Mr. Schoonmaker referred to the number of launches on the Detroit and St. Clair rivers, saying of the 500 or 600 which are to be found in commission there during the season, not one of them has ever met with a single accident. The committee will hold another hearing later for the benefit of those who favor the bill.

IMPROVING LIVERPOOL DOCKS.

Liverpool, Feb. 6.—In my last letter but one, I dealt with an important decision the Mersey Docks & Harbor Board had arrived at, to spend close upon $3,000,000 in new docks and improvements at the Wapping, which is at the south of the dock estate, and at this week's meeting of the dock board, a further scheme was submitted dealing with the north end docks which will involve the expenditure of a further $2,000,000. The Brocklebank and Langton system of docks are largely used by vessels engaged in the North Atlantic trade, and while they are of modern construction, they are altogether unsuitable for the constantly increasing size of the vessels trading to North America, and it is in order to bring them more up-to-date that this large sum is to be spent. The scheme provides for carrying out the following work: The deepening of the passage between the Brocklebank and Canada docks; the deepening of the Brocklebank dock; the construction of a new passage between the Brocklebank and Langton docks in lieu of the existing one, and the provision of a pumping installation, etc., for raising the level of the water in the northern group of docks, together with other minor improvements which I need not narrate. When these alterations are carried out, it will be possible to take a vessel at any state of the tide—any vessel which now trades to Liverpool including the Oceanic or had up to the present been designed—through from the Huskisson to the Alexandra dock system. The inability to do this up to the present had put this dock out of favor. It will also enable other vessels, the very modern vessels, which could not now pass through to the Brocklebank dock, to go through this proposed dock and to use with greater convenience, the graving dock which is now being made. The scheme was approved by the dock board, but from what transpired at the meeting, there will most likely be brought forward in course of time a further project of building two new branch docks connecting with the Brocklebank system, on land now occupied as timber yards. There is no doubt that the Mersey dock board is showing commendable enterprise just now in not only providing for immediate needs, but in looking well ahead in regard to the character of the accommodation which the deeper draught of vessels now and in the future will necessitate.

I have it on the authority of the officials here, that the Canadian Pacific Railway Co. have just come to a working arrangement by which they virtually join the North Atlantic Steamship Conference, and will charge the same ocean and rail rates as the other Canadian lines in the conference. The emigration rates to Halifax and St. John will be £5-10-0, and £6-12-11, until the middle of April, then £5-10-0, and £5-18-4 to Quebec and Montreal. In this connection there is a rumor current here that the Houston Line, now that they have successfully fought the South African "ring," are bent on having a share of the Canadian traffic. At the time of writing I have not been able to get official confirmation, but the rumor comes to me from a usually well informed source. A report also reaches me today from Antwerp that the Manchester Liners, Ltd, are going in for passenger traffic to Canadian port, and to pick up continental traffic at Antwerp.

The Manchester Ship Canal Co. is also maturing a scheme of improvements, which are of first importance. It is stated that a proposal is under consideration to increase the depth of water in the canal by deepening the level of the bottom of each length between Latchford locks and Trafford Road bridge at Salford. It is also proposed to raise the water level between Eastham locks and Latchford locks about 2 ft. Various other important alterations are also to be made, the whole scheme involving an expenditure of well over $1,000,000.

Messrs. Vickers, Sons & Maxim, of Barrow, and Sir W. G. Armstrong, Whitworth & Co., Ltd, have this week received formal orders to proceed as quickly as possible with the construction of two new battleships for the Japanese navy, one to be built and completed for war service by each company. These vessels are to be not only the most powerful fighting ships yet ordered, but are to be ready within the shortest period of time allowed for ships of such dimensions. They will have a displacement of 16,400 tons, will steam about 19 knots, and will excel the best British battleships in their powers of attack, being able to deliver from their main artillery, 11 tons of projectiles per minute, for in addition to four 12-in. guns in the two main barbettes as in British ships, they will have heavier secondary guns than the King Edward VII class of ship in the British navy. Their machine guns will also be more numerous. The system of armor distribution will follow the lines introduced in the Nukasi, which was built for Japan by Vickers, Sons & Maxim, and which system has since been adopted in all ships since designed for the British navy.

There is every indication that the Cunard Line have some big scheme on hand for developing their services between the United States and Liverpool and also to the Mediterranean. At present the only official information afforded is that arrangements are being made for a new service between New York and the Mediterranean, but that the details are as yet not settled. It is however known that with the commencement of April, the Carpathia and Aurania will return to the Liverpool and United States services, and presumably the new arrangements will then come into operation. Another point which has been verified, is that Cunard Line have purchased for their Mediterranean trade with the United States, the steel twin screw steamer Yamuna, just completed for the British Steam Navigation Co., which is to be re-christened the Slavonia, so as to correspond with the names of the other vessels in the fleet. The Yamuna is of 8,831 tons gross and 5,635 tons net, and was built last year by Sir J. Laing & Sons, Sunderland, with engines by the Wallsend Slipway Co. to drive her about 14½ knots. She is in every way admirably suited for the purpose for which she is required, having excellent passenger accommodation, and being fitted throughout in an up-to-date manner. The Cunard Co. have purchased her especially for their passenger and emigrant services between the Mediterranean and the United States, although at the close of the Italian season, she will be engaged in the usual service between Liverpool and Boston each year. The Cunard Co. have also just purchased for the new service a steel twin screw passenger, cargo and cattle steamer, at present building by Messrs. John Brown & Co., Clydebank. The dimensions are said to be 500 ft. by 59 ft. by 36 ft., moulded to upper deck, and she is capable of carrying about 10,900 tons dead weight, on about 28 ft. 4 in. draught. This vessel is now practically finished, and there seems no doubt that the Cunard Co. are going to secure sufficient steamers to carry on a more frequent service and offering very much greater facilities than do the Carpathia and Aurania. The company is said to be negotiating for three other steamers.

The Liverpool Underwriters Association have just issued their returns for January showing the casualties which have occurred to vessels of 500 tons gross and upwards during the month. From this it is seen that the total losses for that period was British, five steamers, (four by stranding and one by collison) of 11,406 tons, and foreign, five sailers, (three stranding, one foundered, and one by fire) of 6,015 tons, and two steamers, (one foundered and one missing) of 2,243 tons. The partial losses included—British, 25 sailers and 217 steamers; foreign, 41 sailers, and 194 steamers, a total of 477. Classified the nature of casualty in given as follows:—Collisions, 142; stranding, 136; weather damage, 91; damage to machinery, etc., 64; fires and explosions, 15; founderings, 2; missing, 1; and other casualties, 31.

Application will be made next session of the Dominion parliament for the incorporation of a company with the title of the Great Lakes & Northwest Transportation Co., for the purpose of constructing such canals as may be necessary to connect Lake Superior with the Lake of the Woods, Ont.; the Red river at Winnipeg, the Saskatchewan river, and the various lakes of Winnipeg, Manitoba and Winnipegosis.

SHIP BUILDING QUIET IN SCOTLAND.

The Year Has Not Opened Auspiciously At All—Two New Battleships For Japan.

Glasgow, Feb. 4.—Our ship building year has not begun well. January is always a slack month in launching because builders like to get all they can into the water before the end of the previous year, while the New Year holidays made a short month. An output of 17,190 tons of new shipping booked in the month, and of only 7,378 tons launched, looks like a balance on the right side, but it really means no improvement. The new work will do very little to mend the depression that prevails on the Clyde, and it is feared that hard times have to be faced through the spring. There was 259,250 tons of merchant work on hand on the Clyde at the end of the year, a decrease of 95,581 as compared with the end of 1902. But a year ago there were a good many orders on which work was not begun. There are very few such, if any at all, at present. Practically all is seen on the stocks, and at many of the yards the vacant berths are more numerous than pleasant. Wage reductions are being discussed with more or less calmness. The only difficulty anticipated is as to the policy of the new executive council of the Amalgamated Society of Engineers, and whether they would support the district in opposition to a reduction. In any case reductions are inevitable among the machinists, though as yet they have only been proposed to the "black squad" ship yard workers, whose representatives had a conference this week with the executive committee of the Clyde Ship Builders' Association. The conference was adjourned while the question is referred to the branches of the Trade Union and to the general body of employers.

The vessels launched in Scotland during January make a total of seventeen, aggregating 12,012 tons, but in the case of several yards some boats which were not launched until shortly after the New Year were included in the report for 1903. This applies to H. M. S. Roxburgh, launched by the London & Glasgow Ship Building Co.; the steamer Rosslyn, by Murdoch & Murray, Port Glasgow; and the steamer Monarch, by the Ailsa Ship Building Co., Troon, for Glasgow; and the tug Proyda, launched by Peter Macgregor & Sons, Kirkintilloch, for Russian owners. The list after these deductions consists of thirteen vessels of 7,378 tons, as compared with thirteen of 19,784 tons in January of last year. With the exception of a trawler of 85 tons built at Aberdeen, all the tonnage in January was launched from Clyde yards. The January total has not been so small for many years. The vessels launched consisted of three single-screw steamers, one sailing ship, one dredger, three lighters, two barges, two tugs, and on trawler. One vessel was of 2,430 tons, two between 1,000 and 2,000 each, three between 500 and 1,000 each, one between 100 and 500, and six under 100 tons. Of the tonnage, 4,330 was for the Mersey, 1,900 for Germany, 660 for foreign owners, 333 for Ireland, 85 for the Dee, and 70 for the Clyde.

The new contracts reported in January were: A. Rodger & Co., Port Glasgow, a cargo steamer of 6,300 tons deadweight, for Glasgow; Lobnitz & Co., a large hopper dredger for service at Hull; Napier & Miller, Yoker, a cargo steamer of 250 ft. for foreign owners; William Simons & Co., a bucket dredger to dredge to a depth of 55 ft. for the British admiralty; Scott & Co., Greenock, a large steam yacht and a small tug, both on their own account; the Campbeltown Ship Building Co., a steamer of 3,000 tons deadweight, for foreign owners; Barclay, Curle & Co., a steamer of 3,600 tons gross for the Booth Steamship Co., Liverpool; Mackie & Thomson, two drifters, for Peterhead owners; Russell & Co., Port Glasgow, a steamer of 7,000 tons capacity for Glasgow; the Irvine Ship Building Co., a steamer of 450 tons, for Glasgow owners; and John Cran & Co., Leith, a tug of 140 tons for Liverpool owners. John Brown & Co. Ltd., Clydebank, are to supply the engines for the battleship Africa, now building at Chatham dock yard. The total of the new ship contracts amounts to about 17,190 tons. Material, too, is higher, for the north of England makers have now raised their price for steel ship plates to £5.10 less 2½ per cent. As against Scotch makers' prices of £5.10, for plates and £5. for angles, less 5 per cent., middlemen are now offering to sell at £5.5, and £4.15, in order to break down the combine. But they are not likely to succeed. Meanwhile, coal is cheap and steel-workers' wages are to be reduced.

TWO NEW BATTLESHIPS FOR JAPAN.

Among the orders for new ships booked by British ship builders are the two battleships for Japan, one to be built by Vickers, Sons & Maxim, and the other by the Armstrong-Whitworth Co., for which the contracts have now been signed, and the work on which is to be hurried forward. The new vessels will be improved types of the Mikasa, built by the Vickers company, which was the last of the six ships constructed in England for the new Japan's navy. The Mikasa is 400 ft. long and of 15,200 tons displacement. The new vessels will be about 20 ft. longer and of 16,400 tons displacement. The speed will be the same, 18½ knots at least; but there will be a great development in the power of attack. It used to be the rule to install four 50-ton guns in pairs in barbettes, and a large number of quick firers, usually the 6 in. 7-ton gun, but the later ships of the British navy have been designed to carry heavy breech-loaders of a caliber and power between these two standardized weapons. The eight vessels of the King Edward VII class have four of 12-in., four 9.2-in. and ten 6-in. quick firers. In the new Japan ships this practice will be further developed, several of the guns being of increased caliber and power, equal to a gain of 22 per cent. striking energy. The armor will be on the Vickers concentrated system, first applied to the Mikasa, and since adopted in all vessels for the British navy. This arrangement consists in armor-plating the four sides of the citadel from 4 ft., or 5 ft. under the water line right up to the upper deck, placing the quick-firing guns within the ironclad walls, and separating them by longitudinal and transverse armored partitions. Formerly, the isolated casemates had 6-in. plating in front and only 2-in. or 3-in. in the rear, so that there was always the danger of a shot entering one side of the ship through the unarmored plates between the casemates, and penetrating the thin rear plating of the casemates on the other side of the ship. There is now no such armored part of the side, and the guns have all-round protection as with turrets.

I understand that the mail contract of the Allan Line with the Dominion government will take effect from August next, by which time the company's turbine steamer Victorian will be ready to inaugurate the service. The sister ship to the Victorian, the Virginian, is to be ready in the spring of 1905. These two steamers, with the Tunisian and the Bavarian will be regular mail steamers, but other vessels of the Allan Line will also be used. Moville will be the port of embarkation for British mails throughout the year, and Quebec the Canadian terminal port during summer while St. John will be the winter terminal port, but the liners will call at Halifax. The new steamers are to make the passage from Moville to Rimouski in six days, and between Moville and Halifax in six days and a half. The Tunisian and the Bavarian will take seven days for the summer service and seven and a half days for the winter. The mail subvention is £2,000 for each round trip of the fast steamers, and half that amount for the other vessels.

It is now stated that the service of steamers between Canada and South Africa is not after all to be discontinued, but that additional and more commodious steamers are to be put on. There is a future for this inter-Colonial trade, as Canada has products which are needed in South Africa and ship owners look to the building up of a great traffic between Halifax and the Cape. Neither of the steamship companies which run alternate boats is easily beaten, and, it is unlikely that any suspension of the service will now take place.

COST OF ARMAMENT IN IRELAND AND FRANCE.

The French naval department are considering the armor protection of the guns in the primary battery of armored cruisers and battleships. In the British ships separate casemates have been hitherto preferred, although in the newer ships the guns are grouped within a concentrated casemate with divisional walls of hardened steel for separating the gun positions from each other. In the French and German navies the guns are usually mounted in pairs in revolving turrets, without the necessity to carry the broadside armor to such a height above the water line as in British ships, nor to extend it over so long an area. The objection urged against these turrets is that while the plates of which they are formed may resist penetration, the great shock of modern hardened projectiles driven against a turret with high velocity and energy may dislodge the turret bodily from its roller bearers, or dislocate the gear by which it is rotated, so that the turret and the guns within it would be put out of action. Tests have been made by the French as to the effect of attack upon a turret, and it is said nothing enclosed within the turret has been discommoded. But the ship attacked was at rest, and a moving vibrating mass is a different object in such an attack from a quiescent body. Vibrations may cause contacts with the walls, which under other conditions would not happen; and Admiral May has stated that a man within a casemate that has been struck may escape if he is entirely free of the walls; but if he is in contact there is every probability of his being killed. The proposal now under consideration in France is to make the turret in the form of a globe resting on all its under sides on bearings. The curvature of the plates will increase the resisting power for a given thickness of metal. It is contended that the weight of protection, as compared with that for the British system, would be 50 per cent. less, and that the protection of the gun would be as effective. The statement is also made that the cost would be 75 per cent. less; but this is doubtful, as the bending of cemented plates must enormously increase the cost per ton.

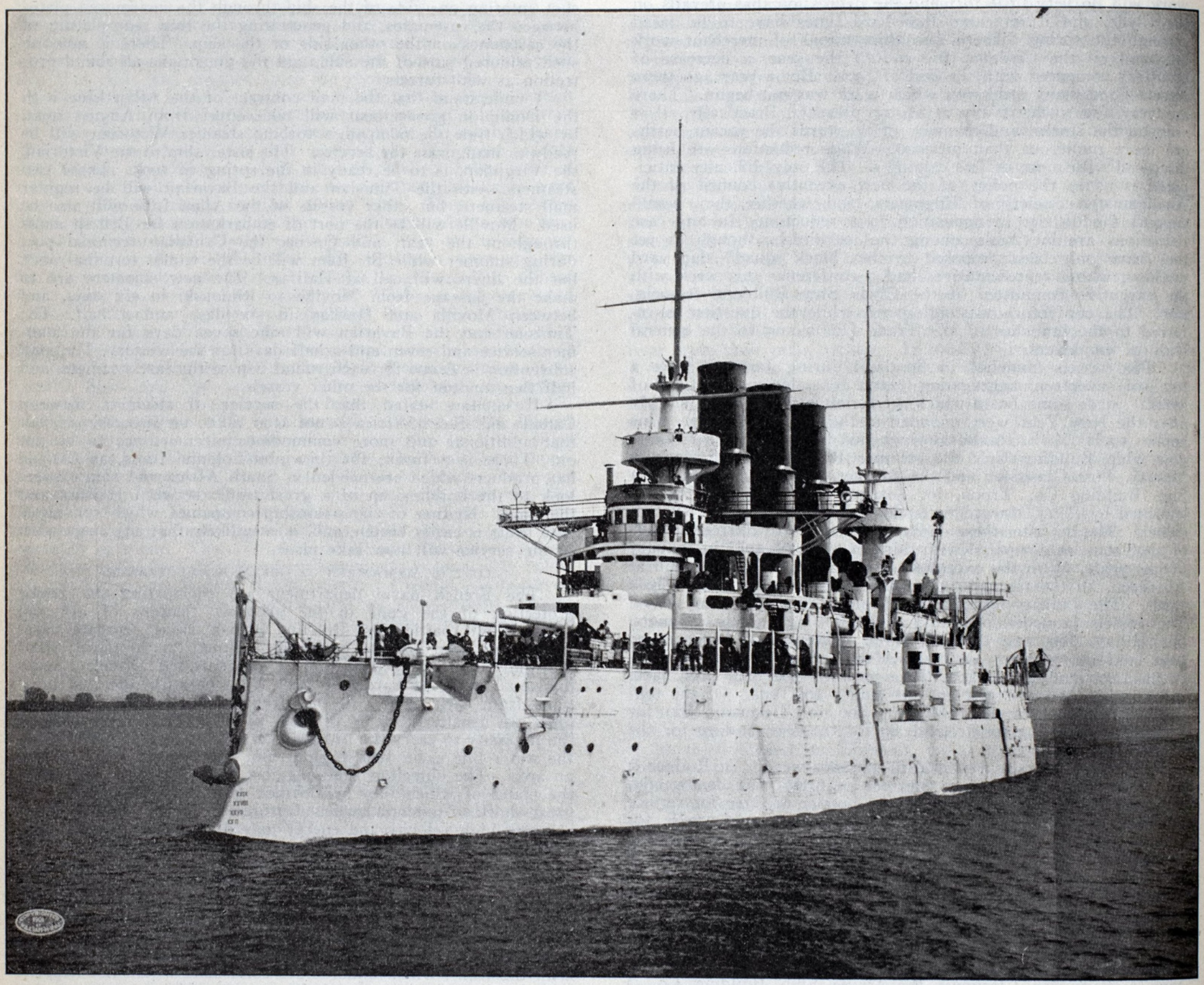
It may interest you to have some details showing the smaller cost of warship armament in Britain in comparison with France. In one of our latest battleships, the London, fitted with four 12-in. guns, twelve 6-in. quick firers, twelve 12-pounders, six 6-pounders, and other machine guns, the cost of armament works out at £67,100. But the French prices for these same guns, the total cost of arming the London would have been £76,400, or about 14 per cent. more. In the case of the Good Hope the difference would have been only an addition of 4½ per cent. on the British cost. She however has only two 9.2-in. guns, and it is in the heavier weapons that French costs show the greatest difference. The French 12-in. guns cost £11,200 each, and the equivalent of our 9.2-in. breach loader £5,224; while the 7.64-in. gun works out at £3,200. In quick-firers we have the 6.46-in. gun at £1,800, the 3.94-in. at £600, and the 2.5-in. at £232.

The Montreal Harbor Commission is considering plans for the construction of a 50-ton floating crane for the harbor to cost $60,000.

RUSSIAN SHIPS DESTROYED BY JAPAN.

In naval circles great interest attaches to the present conflict between Japan and Russia. While most of the ships involved are of British build, some of them were built in the United States. It is interesting to discuss the ships which the Japanese are said to have hit. The Pallada was a comparatively new and modern cruiser. She was built on the Neva and launched in 1899 and was about of the class of the United States cruiser Olympia. Work on her was begun in 1898, when the Grand Duke Alexis laid a silver keel plate on June 4. The Pallada was a triple-screw ship of 6,630 tons displacement with three sets of triple-expansion engines of 3,870 H. P. each. She was designed to make a speed of 20 knots an hour and was credited with having made 19.2 knots in a trial in 1901. The Pallada was 413 ft. 4 in. long, 55 ft. 8 in. beam and drew 21 ft. Her deck armor was 2½ in. thick and the decks were composed entirely of steel, no wood having been used. Her armament consisted of six 6-in. rapid-fire guns, twenty 3-in., eight 1.4-in. and four torpedo tubes, all of which were above the water line. She was one of three swift cruisers which were built at the same time, the two others being the Diana, which also was launched in 1899, and the Aurora, which was launched a year later. The ships of this class were intended to be commerce destroyers.

The Retvizan and the Tsarevitch are two of the biggest battleships in the Russian navy and are more powerful than any now afloat in the United States navy, although the Maine carries as heavy an armament. The United States, however, has more powerful battleships in course of construction. The two ships were built in 1900-01 and were the most important acquisitions to the Russian navy when the czar was strengthening his fighting force at a rapid rate. The Retvizan was constructed by the Cramps in Philadelphia and the Tsarevitch was of French construction. The Retvizan is said to be of the most formidable design ever drawn in this country for a foreign power. In armament she has many new features, which were the outcome of the lessons learned in the Spanish-American war. Although the hull and engines were built by the Cramps, the armor plate used in her construction was all made abroad and brought here. The Retvizan is 374 ft. long, 72 ft. 2 in. beam and draws 25 ft. She is a twin-screw ship and has a displacement of 12,700 tons. She has a 9-in. Krupp steel armor belt, extending two-thirds of her length, terminated by athwartships bulkheads. Krupp steel from 5 to 10 in. thick protects the turrets and a steel deck from stem to stern is from 2 to 4 in. thick. The Retvizan carries a terrific battery of guns made by the Russians at the Obrukoff works and Hotchkiss rapid-fire rifles. Her armament consists of four 12-in. guns, twelve 6-in. guns and a rapid-fire battery of twenty 3-in., twenty 3-pounders and six 1-pounder guns. Twenty-four



Russian Battleship Retvizan said to have been Destroyed by the Japanese.

[*Built by Cramps, Philadelphia, Pa.*

Niclausse boilers supply the steam for two triple-expansion engines, which have driven the ship at a speed of more than 18 knots an hour. Her normal coal supply is 1,016 tons, and the double bottom is fitted for the storage of liquid fuel. The Retvizan is equipped with two submerged torpedo tubes and four above the water line. She carries 750 men.

On an unofficial test, with a foul bottom, she made a speed of 17.75 knots and after another trial she steamed into Boston with the figures "18.8" painted on her funnels, showing at that time that she was the fastest craft of her type afloat. Her contract required that she should make a speed of 18 knots an hour for twelve consecutive hours, and she was run for that period of time straight ahead under a full head of steam. At no time did she fall below the required 18 knots, and for one hour she made 19 knots. The test was not intended to be official, but the Russians were so pleased with the performance that the speed trial that had been planned was abandoned. After the run Edward S. Cramp said it was the most successful trial ever made by a vessel his company had built. The ship's guns also were tested soon after she left the Philadelphia yards, and their performance, especially that of the big 12-in. rifles, was most satisfactory.

The Tsarevitch, which is also an armored battleship, is a little larger than the Retvizan. She is 388 ft. long, 76 ft. beam and draws about 26 ft. Like the Retvizan she carries 750 men. Her displacement is 13,110 tons and her speed is about 18 knots. She was launched at the Forges et Chantiers de la Méditerranée at La Seyne in February, 1901, and was designed by M. Legane. The Tsarevitch's belt of steel is 9.8 in. thick amidships at its

upper edge and 6.6 at its lower extremity, tapering to about one-third of these thicknesses at the bow and stern. Her guns are protected by plates from 10 to 12 in. thick. Internally two vertical bulkheads of Krupp armor 4 in. thick run the length of the ship's side. Above the armored deck proper is a second deck 4 in. thick. The space between the two decks is designed to be filled with coal. Her guns are so mounted that two 12-in. and eight 6-in. rifles are available for bow and stern fire, and for broadside she has four 12-in., six 6-in. and a big battery of rapid-fire guns. She has two submerged torpedo tubes forward; one tube submerged in both bow and stern and two broadside above water.

The other Russian ships on the Pacific station are:

BATTLESHIPS.

	Built.	Tonnage.	Speed. knots.	Chief armament.	
Pobieda	1900	12,000	19	4 10 in.	11 6 in.
Poltava	1894	11,000	17	4 12 in.	12 6 in.
Sevastopol	1895	11,000	17	4 12 in.	12 6 in.
Petropavlovsk	1894	11,000	17	4 12 in.	12 6 in.
Peresviet	1898	12,000	19	4 10 in.	10 6 in.

RE-ENFORCEMENTS TO JOIN.

Ossilabya		12,000	..	4 10 in.	10 6 in.
Navarin		9,000	..	4 12 in.	8 6 in.
Imperator Alexander III			..		

CRUISERS.

Askold	1900	7,000	23		12 6 in.
Bayan	1900	8,000	21		2 8 in.
Gromohel	1899	12,000	20	4 8 in.	16 6 in.
Russia	1896	12,000	20	4 8 in.	16 6 in.
Ruric	1892	11,000	18	4 8 in.	16 6 in.
Bogatyr	1901	6,000	23		12 6 in.
Varyag	1899	6,000	23		12 6 in.
Diana	1899	7,000	20		8 6 in.
Boyarin	1900	3,000	22		6 4.7 in.
Navik	1900	3,000	25		6 4.7 in.
Zabinca	1878	1,300	14		Field guns.
Djijdjit	1878	1,300	13		3 6 in.
Rusboynik	1879	1,300	13		3 6 in.

Other Russian re-enforcements to join are the Gremaistahy, Aurora, Almaz, Otrajny and Dimitri Donskoi. The Russian gunboats on the station are nine in number, the destroyers eighteen and the transports six. Thirteen destroyers are to join the Pacific squadron. The Russian fleet in the Yellow sea, with the re-enforcements which will soon be added, compares numerically with Japan's strength as follows: Russia, ten battleships and twenty-one cruisers; Japan, seven battleships and twenty cruisers. Against Russia's fighting array the Japanese are able to place vessels of equal size and displacement, but in actual weight of metal they are at a disadvantage. In the armor of the vessels there is little difference between the two fleets. Japan, however, derives a great advantage from her ability to use her fortified posts as naval bases. This factor is of such importance that naval experts have said that it would induce Japan to risk her entire fleet in a single engagement. Japan will also obtain all the auxiliaries to a war fleet that she may need from her merchant marine, which has increased enormously in the last few years.

In her war with China ten years ago Japan had no battleships, but her cruisers made quick work of the bigger vessels of the enemy in the battle of the Yalu river and at Wei-Hai-Wei. She now has on the Yellow sea ready for action fourteen first-class armored ships, six of which are battleships, one more being in the Indian ocean on her way to the east, and eight large cruisers almost equal in effectiveness to battleships. The following is a list of Japan's vessels already concentrated near Port Arthur, the asterisk denoting that the vessel has been completed since the Chinese-Japanese war:

BATTLESHIPS.

FIRST-CLASS (six ships).

Name.	Built.	Tonnage.	Armament	Speed, knots
Mikasa	1900	15,200		18.6
Hatsuse	1890	15,000	4 12-in., 14 6-in. Q. F.,	19
Asahi	1899	15,200	40 smaller guns.	
Shikishima	1898	14,850		18.6
Fuji	1896	12,450	4 12-in., 10 6-in. Q. F.	
Yashima	1896	12,300	24 smaller.	19

CRUISERS.

ARMORED (eight ships).

Iwate	1900	9,750	4 8-in. Q. F.	21.8
Idzumo	1899	9,750	14 6-in. Q. F.	21
Yakumo	1899	9,850	(12 only in Yakumo	20
Adzumo	1899	9,400	and Adzumo)	20
			20 smaller.	
Asama	1898	9,700	(19 only in Asama	22.3
Tokiwa	1898	9,700	and Tokiwa)	23
			1 10-in.	
Kasaga	1903	8,500	2 8-in.	21
Nisshin	1903	8,500	14 6-in.	21
			20 smaller.	

PROTECTED, FIRST-CLASS.

None.

PROTECTED, SECOND CLASS (twelve ships).

*Chitose	1898	4,898	2 8-in. Q. F.	22.5
*Kasagi	1898	4,784	10 4.7 in. Q. F.	22.5
*Takasago	1898	4,180	18 smaller.	23
Akitsushima	1892	3,100	4 6-in. Q. F.	19
			6 4.7 in. Q. F.	
			12 smaller.	
Yoshine	1892	4,180	4 6-in. Q. F.	23
			8 4.7 in. Q. F.	
			22 smaller.	
Hashidate	1891	4,210	1 12.5-in. (Canet)	17
Matsushima	1890	4,210	11 4.7 in. Q. F.	17.5
Itsukushima	1889	4,210	19 smaller.	17
(Matsushima has 12 4.7 in. and only 16 smaller guns.)				
Naniwa	1885	3,727	2 10.2-in.	18.7
			6 6.6-in. Q. F.	
*Takachiho	1885	3,727	16 smaller.	18.7
*Tsushima	Bldg	3,365	6 6-in. Q. F.	
Niitaka	Bldg	3,365	5 4.7-in.	
			4 smaller.	20

In addition to the foregoing list, one battleship is on its way from the Baltic.

In addition to the vessels enumerated in the foregoing tables, the Japanese have a torpedo flotilla of thirty-five vessels. It is a matter of considerable interest to England, which depends so largely upon its navy for protection, that with the single exception of the Kasagi, which was built by Cramp of Philadelphia, the first division of the Japanese fleet consists of vessels of British build. To the people of the British empire, therefore, there will be an especial interest in the first great sea battle between Russia and Japan.

The vessels in the first division of the Japanese fleet, whose place of concentration is Nagasaki, 585 miles from Port Arthur, are as follows: Battleships—Hatsuse, built at Elswick; Shikishima, built on the Thames; Asahi, built on the Clyde; Fuji, built at Blackwall; Yashima, built at Elswick. Cruisers—Iwate, Asama, Idjumo, Tokiwa and Takasago, built at Elswick, and the Kasagi, built in Philadelphia. Japan's auxiliary fleet includes some forty steamships, belonging mostly to the Nippon, Yusen and Kaisha lines.

RUSSIAN AND JAPANESE NAVAL STRENGTH.

Fred B. Whitney, clerk of the house committee on naval affairs at Washington, has compiled a careful statement showing the exact strength of the navies of Russia and Japan. Russia has a total tonnage of 416,158 tons and 55,208 officers and men. Japan has 243,586 tonnage and 31,697 officers and men. Russia has built seventeen first-class battleships with a total tonnage of 201,129 tons; twelve second-class battleships and monitors of 66,879 tons; eight armored cruisers of 71,261 tons; six first-class protected cruisers of 19,450 tons; five second-class protected cruisers of 19,450 tons, and eleven other cruisers and scouts over 1,000 tons each, with a total tonnage of these amounting to 18,193, making a grand total of fifty-nine ships built and a tonnage of 416,158. Russia is also building eight first-class battleships of 112,862 tons, three protected cruisers, first-class, of 19,965 tons, and three protected cruisers of second-class, 9,445 tons, making a total of fourteen ships building, with a tonnage of 142,274. Russia's torpedo fleet consists of forty-eight destroyers, 165 torpedo boats, one submarine, and she is building nine destroyers and five torpedo boats.

Japan has six first-class battleships of 84,300 tons, three other battleships of 13,004 tons, eight armored cruisers of 73,550 tons, ten protected cruisers of 41,276 tons, seventeen other cruisers above 1,000 tons each, with a total tonnage of 31,506, making a total of forty-four ships, with a tonnage of 243,586. Japan is building three protected cruisers of 10,095 tons. Her fighting navy, with vessels built and building, is forty-seven ships, with a tonnage of 253,681. Japan has nineteen torpedo boat destroyers, sixty-seven torpedo boats, and is building eighteen torpedo boats.

INTERESTING MARINE REPAIR JOB.

Engineering, London, gives an account of a repair job done at the Northam Iron Works, Southampton, on the steamship Ninevah. This vessel arrived in Southampton Water on Wednesday, Jan. 6, with a fractured intermediate cylinder. A board of trade and Lloyd's survey was held on board the following morning, when it was decided to bore out the cylinder and fit in a cast-iron liner, together with long vertical stays to strengthen the fractured parts of cylinder. This work necessitated the turning down of the old piston, and fitting the same with new junk ring, floating ring and packing rings. The liner was cast, bored out, and fitted in place, and the vessel left on her voyage to the Cape and Australia at 8 o'clock on the following Friday morning, Jan. 15; the whole work being carried out in seven days from the commencement, to the entire satisfaction of the company's officials and the surveyors. The cast weight of the liner was over 2 tons.

The unusual thickness of the ice in Milwaukee harbor has put five vessels out of commission temporarily. The car ferry Grand Haven broke two blades from her wheel while coming from Grand Haven; the tug Meyer broke her wheel while helping the Grand Haven into the slip; the tug Night twisted her shaft and the tug Welcome lost several steel plates while bucking ice in the river.

GROWTH OF LAKE ORE TRADE.

The Lake Superior Country Shipped 24,452,267 Tons of Ore for Consumption in the United States- How the Trade Has Grown as Shown in the Tables.

Accompanying this issue of the Review is a tabulated supplement, compiled by the Iron Trade Review, showing the shipments from all the Lake Superior mines since the discovery of iron ore in 1844. The shipments by lake during 1903 were 23,649,550 gross tons to which must be added a rail movement of 632,045 tons, making the total shipments for the year 24,281,595 tons. This does not include the shipments from the Helen mine on the Michipocoten range in Canada which is, however, largely consumed in the United States. The Helen mine shipped 203,419 tons of which 170,672 tons went to Lake Erie ports. Therefore the Lake Superior country shipped last year 24,452,267 tons of ore to be smelted in blast furnaces in the United States.

It is interesting to note that shipments from the mines of the United States Steel Corporation in 1903 (including 233,478 tons from the Lake Superior and Queen properties on the Marquette range taken by the Cleveland-Cliffs Co.) were 13,485,597 tons, or 55.5 per cent. of the whole, as against 16,136,787 tons and 58.5 per cent. in 1902. From this computation the Carnegie Steel Co.'s half of the Pewabic mine's output—489,175 tons in 1903 and 530,291 tons in 1902—is omitted.

The great development has been in the giant Mesabi range. While this range was discovered only twelve years ago it has already outstripped all the ranges except the Marquette where iron ore deposits were first discovered and which has been a continuous producer for nearly fifty years. The Mesabi range has made a record of 66,640,349 tons which is within 3,000,000 tons of the Marquette range's total. Such have been the leaps and bounds of the ore trade that the total of 1903 is one hundredfold greater than in 1864 and fifty times what it was in 1869. Of the grand total of 243,865,237 tons which have been produced in this region since it was discovered half took forty-two years to produce and the other has been the work of the past six seasons.

The list of shipping mines for 1903 contains 142 names as against 133 in 1902 and only 104 in 1901. The Mesabi shows eleven new shipping mines in 1903 and seventeen in 1902, a gain of twenty-eight for two years. In the Marquette range statistics the Cleveland-Cliffs Iron Co.'s shipments are given in bulk, being almost entirely from that company's Ishpeming group. Of the Negaunee mines shipments 10,909 tons were made after the Cleveland-Cliffs Iron Co. took hold of the property. On the Gogebic range the same company has the Ashland mine and it has a proportion also of the shipments from the Lake Superior Iron Co. properties and the Queen group on the Marquette range, making the total of the ore shipped on its account in 1903, 1,369,996 tons. Following is a table of shipments since the canal was first opened in 1855:

Year.	Total shipments.	Year.	Total shipments.
1855	1,449	1879	1,375,691
1856	36,343	1880	1,908,745
1857	25,646	1881	2,307,005
1858	15,876	1882	2,965,412
1859	68,832	1883	2,352,840
1860	114,401	1884	2,518,693
1861	49,909	1885	2,466,642
1862	124,169	1886	3,565,144
1863	203,055	1887	4,762,107
1864	243,127	1888	5,063,877
1865	236,208	1889	7,292,643
1866	278,796	1890	9,003,725
1867	473,567	1891	7,071,053
1868	491,449	1892	9,072,241
1869	617,444	1893	6,065,716
1870	830,940	1894	7,748,312
1871	779,607	1895	10,429,037
1872	900,901	1896	9,934,828
1873	1,162,458	1897	12,464,574
1874	919,557	1898	14,024,673
1875	891,257	1899	18,251,804
1876	992,764	1900	19,059,393
1877	1,015,087	1901	20,589,237
1878	1,111,100	1902	27,571,121
		1903	24,281,595

The shipments during 1902 from the different ports, from the different ranges and from each of the mines were as follows:

SHIPMENTS BY PORTS AND ALL-RAIL, GROSS TONS.

	1903.	1902.	1901.	1900.
Escanaba	4,277,561	5,413,704	4,022,668	3,436,734
Marquette	2,007,346	2,595,010	2,354,284	2,661,861
Ashland	2,823,119	3,553,919	2,886,252	2,633,687
Two Harbors	5,120,656	5,605,185	5,018,197	4,007,294
Gladstone	85,816	92,375	117,089	418,854
Superior	3,978,579	4,180,568	2,321,077	1,522,899
Duluth	5,356,473	5,598,408	3,437,955	3,888,986
Total by lake.	23,649,550	27,039,169	20,157,522	18,570,315
Total by rail.	632,045	531,952	436,015	489,078
Total shpmts	24,281,595	27,571,121	20,593,537	19,059,393

SHIPMENTS BY RANGES, GROSS TONS.

	1903.	1902.	1901.	1900.
Marquette Range.	3,040,245	3,853,010	3,240,699	3,157,522
Menominee Range	3,741,284	4,627,524	3,623,730	3,261,221
Gogebic Range	2,912,912	3,663,484	2,938,155	2,875,295
Vermillion Range.	1,676,699	2,084,263	1,786,063	1,655,820
Mesabi Range	12,892,542	13,342,840	9,004,890	7,809,535
Miscellaneous	17,913	.....	.....	.....
Total	24,281,595	27,571,121	20,593,537	19,059,393

MARQUETTE RANGE.

Mine.	Gross tons.	Mine.	Gross tons.
Bessie	29,718	Lake Superior	604,829
Beaufort	134,648	Lillie	77,454
Breitung	7,854	Mary Charlotte	34,303
Cambria	41,168	Negaunee	224,665
Champion	74,238	Princeton	84,223
Chester	6,786	Queen	254,658
Cleveland-Cliffs	810,845	Republic	155,415
East New York	22,523	Richmond	55,593
Foxdale	5,053	Volunteer	7,395
Hartford	20,085	Winthrop	72,433
Jackson	5,409		
Lake Angeline	310,950	Total	3,040,245

MENOMINEE RANGE.

Antoine	107,886	Hope	7,339
Aragon	522,035	Lamont	43,736
Armenia	31,901	Lincoln	15,606
Baltic	123,236	Loretto	87,939
Bristol	246,581	Mansfield	51,440
Caspian	2,088	Millie	40,860
Chapin	704,051	Munro	8,739
Commonwealth	5,051	Paint River	9,863
Crystal Falls	117,096	Penn Iron Mg. Co.	343,543
Cundy	111,851	Pewabic	489,175
Dunn	5,365	Quinnesec	49,708
Florence	95,877	Riverton	97,633
Northwestern	17,280	Tobin	45,386
Genesee	61,694	Verona	50,910
Great Western	100,751	Vivian	12,122
Groveland	1,294		
Hemlock	79,420	Total	3,741,284
Hiawatha	53,828		

GOGEBIC RANGE.

Anvil	11,309	Mikado	108,709
Ashland	274,138	Montreal	93,139
Atlantic	148,385	New Davis (Wis.)	734
Aurora	355,365	Newport	279,905
Brotherton	94,986	Norrie	790,346
Cary	89,221	Ottawa	87,929
Chicago	22,965	Palms	60,800
Colby	54,915	Pike	115
Geneva	7,108	Royal	204
Harmony	2,246	Sunday Lake	91,383
Hennepin	862	Tilden	211,534
Iron Belt	25,353	Upson	310
Ironton	16,875	Yale	46,211
Jack Pot	31,709		
Meteor	6,156	Total	2,912,912

VERMILLION RANGE.

Chandler	460,548	Savoy	283,211
Minnesota	175,114	Zenith	161,091
Pioneer	596,735		
		Total	1,676,699

MESABI RANGE.

Adams	1,109,750	Laura	79,286
Agnew	108,847	Leetonia	200,163
Albany	109,608	Leonard	10,591
Biwabik	807,511	Lincoln	279,399
Cass	50,155	Longyear	81,604
Chisholm	168,831	Mahoning	1,009,446
Clark	300,492	Malta	11,675
Commodore	20,436	Minorca	115,886
Corsica	34,043	Morrow	49,409
Croxton	100,297	Mountain Iron	1,348,714
Cyprus	121,818	Oliver	5,866
Day	107,781	Pearce	50,204
Duluth	150,053	Penobscot	1,615
Elba	93,616	Pettit	52,706
Fayal	1,460,601	Pillsbury	229,133
Franklin	92,019	Sellers	251,631
Genoa	303,700	Sharon	48,199
Glen	171,705	Sparta	40,458
Grant	18,928	Spruce	587,153
Hawkins	107,905	St. Clair	6,148
Iroquois	17,562	Stephens	87,055
Jordan	190,024	Stevenson	1,014,582
Kanawha	23,932	Troy	15,099
Kinney	32,352	Union	91,496
Lake Sup. Group	1,226,066	Utica	156,180
La Belle	48,298	Winnifred	39,179
La Rue	53,335		
		Total	12,892,542

MISCELLANEOUS.

Iron Ridge 17,913

Grand total.....24,281,595 gross tons.

SENATOR HANNA—AN APPRECIATION.

In the death of Senator Hanna the country has lost a great man. It might be said of him that he died fighting. This dogged determination to beat back even the grim reaper was natural to him. He had been compelled to show his passport at every step of his life. He had fought every inch of his way throughout life. It was natural, therefore, that he should have made one of the most marvelous fights in the history of medicine against the disease which was slowly sapping his vitality. His career is a great example of the power of will. He was over sixty years of age before he truly became a national figure, though he had been conspicuous on the local stage for over a quarter of a century. He went into national politics in 1896 with the same energy and spirit that he had gone into business. He had been a devoted adherent of John Sherman. Sherman was his candidate for president in 1884, 1888 and 1892, and Hanna stood for him loyally in every convention. He realized, however, when Sherman failed of the nomination in 1892 that it was impossible ever to hope again to nominate him. Incidentally at the varion conventions he had been observing McKinley, whose course in public affairs he endorsed, and a close and intimate friendship sprung up between them. McKinley was pledged to the doctrine of protection. It was a doctrine to which Hanna had always given substantial aid and it was natural that their associations should become somewhat close. It is true that in 1895 the current was setting in strongly for McKinley, and it may be that McKinley would have been nominated without Hanna's aid. But certainly Hanna's participation made the nomination assured. Never was a preliminary campaign managed with such system and method. It was run precisely as a great business would be run. Organizations were perfected in each county in each state and reports regularly received as though they were being canvassed for business. Amazing as it may seem, considering the extent of his private affairs, Hanna handled this campaign personally. Those who had eyes in their heads in Cleveland saw as early as February, 1896, that M. A. Hanna was going to be the one great figure in the political campaign of 1896. It has been reported, and it is probably true, that he paid the expenses of that preliminary campaign out of his own pocket. Anyone who spent a half hour with him in his office could see how literally engrossed he was in it, dictating letters, tearing open telegrams and writing confidential instructions with his own hand. When he took the train for St. Louis he was the whole convention. He had enough delegates of his own selection to give the nomination to McKinley. Then followed the beautiful campaign at Canton. It was organized as no other campaign in this country ever was. All roads led to Canton. Each day was parceled out to the states and parts of states. Every company and every regiment was assigned to its proper station, every speaker knew precisely what he had to say, having been required to submit in advance copies of his address, which was, in turn, condensed and digested for newspaper consumption—all done in advance, all well planned and nothing whatever left to chance. The perfection of it was simply beautiful. It was the business man in politics. It was merely a public revelation of the business methods which had made the firm of M. A. Hanna & Co. so all-powerful in the immense trade of the great lakes. So suddenly and so large did he loom upon the national horizon that the whole country was astounded at him. So agreeable did he find public life that it was natural he should seek public office. He became a candidate for United States senator. It is needless to enter here into the bitterness caused by the deflection in his own ranks and his election by the narrow majority of one. It is sufficient that a few months ago he was unanimously returned to the senate with such an endorsement as few men have ever received. But the interim had been marked with a prodigious development of the senator's character. His metamorphosis dates from 1896. He speedily realized that public life requires a man to have more sides than are needed in a purely business life. While he abated not one jot of his firmness he learned how to become firm without being stubborn. He drilled himself into a capacious, receptive and pliable instrument, but he attacked the new problems which presented themselves to him with dynamic energy. Whenever he undertook a thing he entered heart and soul into it. This was especially true of his speech-making. He would leave the platform ringing with perspiration from the violence of his erertions. It is probably the greatest tribute to say of him that he became, after he had passed sixty years of age, one of the country's greatest speakers. But the reason of this is not far to seek. The parent of eloquence is sincerity. Without it mere intellectual capacity is useless to convince. Hanna was first, last and all the time sincere. When he entered the senate he directed his attention to the Isthmian canal. This was a perfectly logical thing for him to do, for his previous training had told him that it was one of the measures which had much to do with the future development of his country. He saw the prepondering sentiment was in favor of Nicaragua, but he examined the evidence for himself and with a mind unbiased. He became convinced that the superior route was through Panama, and this man, untrained in speech, statesmanship and public life, in an address lasting two days and wholly extempore as far as words are concerned, convinced the senate of the United States that he was right. The time, the occasion and the man contributed to make this one of the most profound scenes that has ever been witnessed in the United States senate; and judged as a single act of the intellect it is the crowning achievement of Hanna's life.

Few appreciate it, but Senator Hanna was one of the most deeply patriotic men in the United States. He had done more to develop its resources than any dozen men, and he stood in the halls of congress as the champion of its physical welfare. He was maligned, he was abused; but he was beginning to be understood, and had he lived he might have been able to cement more closely the joint interests of capital and labor.

TURBINE STEAMER FOR LAKE ONTARIO.

The turbine steamer for Lake Ontario which is being built by R. W. Hawthorn, Leslie & Co., at Hebburn-on-Tyne, England, for the Turbine Steamship Co. of Hamilton will be operated between Hamilton and Toronto. The vessel will be specially suitable for such a service and will be built both to the British Board of Trade requirements and to those of the Canadian government. The dimensions will be: Length, 260 ft.; breadth, 33 ft.; depth, 20 ft. 9 in. Under the Canadian regulations she will carry between 1,500 and 2,000 passengers, and the provisions for the comfort of passengers are of the best description. A spacious saloon paneled in polished mahogany will be situated on the main deck aft, in which the seating accommodation, tastefully upholstered in velvet, will be arranged so as to form ten comfortable bays. This saloon will be exceptionally well lighted by large plate glass windows in the sides of the vessel and by electric light during the night passages. In close proximity to the saloon will be the tea and ladies' rooms, both fitted up in the best and latest styles. Below the saloon, on the lower deck, will be a large dining saloon, with ample seating accommodation, the galley and pantry being arranged forward of it. Gentlemen will be specially looked after in the way of a bar lounge close to the main saloon, and a smoking room which will be placed on the promenade deck. Suitable lavatory accommodation will be provided forward of the saloon. On the main deck will be a deckhouse forming a large entrance hall to the main saloon, the gangway doors for passengers leaving or joining the vessel being placed at each side of this hall, and an easy staircase will give access to the dining saloon below. Cargo will only be carried on the main deck forward, and below this, accommodation will be provided for the officers, engineers, steward, waiters and crew. The promenade deck will have a fine reach of clear space forward and aft, and there will be a large well-lighted shelter forward. The hurricane deck will also be available as a promenade deck, being clear from end to end except for the space required for stowing life-boats and life-saving appliances, and for the captain's quarters and wheelhouse forward. The whole of the accommodation will be heated by steam and the vessel lighted throughout by electric light, a powerful searchlight being fitted on the bridge. The engines of the new vessel will consist of three Parsons' compound steam turbines, viz., one high-pressure turbine in the center line of ship and one low-pressure on either side. Each turbine will control an independent line of shafting and there will be three propellers, i. e., one on each shaft. The reversing turbines, which will be of special size, will be incorporated in the low-pressure turbines, to admit of the boat being worked astern. Steam will be supplied by two large cylindrical boilers, and the propelling machinery will be capable of driving the vessel at a speed of about 21 miles an hour. The vessel is to be completed for placing on the route during the season of 1904.

John Murphy, a veteran marine engineer, died at Ashtabula last week. His home is in Grand Rapids, Mich.

AT THE HEAD OF THE LAKES.

Duluth, Feb. 17.—It is expected that shipments of lumber from the head of the lakes this year will be about 50,000,000 ft. under last season, this being the estimated falling off in the cut, and the demand from the west and the car trade being about the same as a year ago. Mills that are working this winter will have a large stock of lumber on hand at the opening of navigation, and this is practically all sold now, for early shipment, while most of the 50,000,000 ft. that was on docks at the close of navigation, and unsold, has since been placed. It is stated that two shippers in Duluth have sold for the coming year about 150,000,000 ft. from various mills, and to various customers in the east, largely at Lake Erie ports and New York and New England markets. Others have made large sales also, and the amount already placed is well up. But lumbering operators went into the winter with the idea that this was a good time to restrict operations, and they have done so, and now it is too late to make change in their plans for the output.

The Lehigh Valley coal docks at West Superior will be extended $15,000 worth by L. D. Campbell & Co., of Duluth, to whom a contract has just been given for the work.

As indicating the small amount of dredge work to be done at the head of Lake Superior the coming season it is stated that the largest government contract to be let this season is that for the harbor of Port Wing, Wis., which is for 18,000 yds. The contract was let this week to the Northern Dredging Co. of Duluth. There will be some private dredging in head of the lake harbors, but this is probably to be trifling. The government work on the new Superior entry piers, etc., is all done without contract. There was $3,000 available for Port Wing improvement, and the balance over this contract price will be used in making a channel 15 ft. deep for vessels to turn in.

At a meeting with Congressman Bede in Duluth Saturday last the plan of a protecting breakwater outside the Duluth ship canal was considered. Representatives of a number of shipping interests were present, as well as Capt Alex. McDougall, Capt. Potter, of the government service, and others. A bill was finally drawn up to be presented by Mr. Bede asking congress for the money and authority for the work. It was conceded that such a pier was needed. It is expected that the cost of a work as outlined in the bill will be considerable.

Wieland Bros., who bought the wreck of the whaleback steamer Thomas Wilson two years ago, as she lay off Duluth harbor, in 65 ft. of water, are now actually making preliminary tests looking toward an attempt to raise her. They report that they will try to save the ore cargo, but it will probably cost more to get this to a furnace than it is worth.

GROWTH IN SIZE OF AVERAGE ORE CARGOES.

Duluth, Feb. 17.—Average ore cargoes from the docks of the Duluth, Missabe & Northern road at Duluth for last year were almost exactly 6,000 gross tons. A great many cargoes were loaded at the rate of 1,000 tons per hour, in fact that was an ordinary speed where there was not too much delay from outside causes. The docks handled 929 cargoes during the year. These figures are all in excess of any previous year.

The three iron ore railways of the Mesabi and Vermillion ranges last year employed steadily during the season of navigation about 4,200 men, and have now on their rolls almost half as many. They find their winter business far above that of any preceding period, due entirely to the growth of the timber and forest products traffic, which has become a far greater thing than was ever believed possible.

Minnesota mines are hardly looking for orders for the season much before the first of May. This will not permit shipment of any considerable amount till well into June. Last year the Duluth, Missabe & Northern road shipped some ore to dock about April 15, and was hard at it a few days later. These differences in dates are a pretty good indication of the difference in conditions. The various ranges still profess to expect a lively summer but men in the trade do not look for much and think shipments will be far under those of last year. At present rate of consumption there is enough ore on lower lake docks and at furnaces to keep them going till well into the next winter, possibly until midwinter.

PRELIMINARY WORK ON ERIE CANAL.

Over 100 men are now engaged in the preliminaries for enlarging the Erie canal to accommodate barges of 1,000 tons capacity. For more than a month a whole floor of offices has been occupied at Albany by a staff copying maps made by previous surveys. Of the 1900 survey only one copy was made, and this has been reproduced in number with corrections. Eight parties of surveyors have been out upon the canals since the first of December. They are now at Cohoes, at Fort Miller (Champlain canal), between Rome and Oneida Lake, at a point 6 miles east of Savannah, between Rochester and Lockport, and near Tonowanda. They are making surveys of the parts upon which the earliest contracts will be let. By spring, when the first bids are to be advertised for, detailed information regarding different stretches will be available, along with reports upon the present situation of locks, and suggestions as to desirable changes. All these are necessary so that contractors will know on what they are bidding. Boring machines are in operation to determine the character of rock at Cohoes, where the biggest locks will be built. In the Hudson and the Mohawk, in Oneida Lake and Tonowanda creek cuttings have been made through the ice to take soundings. This is a part of the work which winter rather aids. In summer, on the canals, boats interfere with the taking of soundings, for lines have to be stretched from bank to bank.

The chief engineering difficulty of the enlargement is how to control the floods of the Mohawk river. All the high water marks have been noted, and white stones erected to give permanent indications of the floods to be provided against. This and all the other preparatory work have been done with funds available to the comptroller. Consequently there is no pressing need for hastening the bond issue. Neither is there a pressing and immediate need for the appointment of the board of expert engineers. There can be nothing for them to do, nothing for them to work with, till the maps, facts, and figures of the surveyors have been prepared and arranged.

TOWING COMPANY'S CONFERENCE WITH ITS MEN.

A conference to adjust some differences brought over from last year was held between the officers of the Great Lakes Towing Co. and the Licensed Tug Men's Protective association at Cleveland last week. Capt. Bush, president of the Cleveland lodge of the tugmen's association represented the men, while Mr. Harry Coulby represented the towing company. Mr. William Livingstone, president of the Lake Carriers' association was selected as arbiter. The conference lasted two days and voluminous testimony was taken by both sides, which is now being digested by Mr. Livingstone, who will probably deliver his decision sometime during the present week. The circumstances of the controversy briefly are these: When the steamer Glidden was sunk in the ship canal in Lake St. Clair flats last fall, Mr. Coulby as general manager of the towing company sent three tugs from Cleveland to assist in removing the wreck. Double crews were furnished for each tug, or six crews in all. Fearing later that this subtraction might cripple the towing service in Cleveland he ordered the tug Sunol from Ashtabula to Cleveland to help out. The Sunol was, of course, manned by members of the Licensed Tug Men's Protective association, but when she got to Cleveland the Cleveland men declined to allow her to work. She remained in Cleveland on full pay for three weeks but never turned a wheel. Mr. Coulby declined to act in this matter at all, claiming that he had furnished relief in transferring the tug from Ashtabula to Cleveland and that as they were all members of the same association it was the men's part to settle the matter among themselves. The fact remains, however, that the Sunol did not work during the whole time that she was in Cleveland. When the three tugs returned from the wreck of the Glidden to Cleveland the men claimed that they were entitled to every third night off and every third Sunday, a privilege which they, of course, did not enjoy while in the ship canal. One Saturday night when Mr. Coulby was in Buffalo they suddenly determined to quit work. Mr. Coulby was communicated with over the telephone but declined to discuss the grievances at all until the men returned to work, holding that they were violating section 5 of the agreement with them which reads: "All complaints, objections and questions arising under this agreement that cannot be adjusted between the parties hereto shall be arbitrated in the usual way, men to continue work pending such arbitration." The men were finally brought to realize that they were violating their own agreement by suspending labor, and on the Thursday night following they resumed work. It is Mr. Coulby's contention that the men were not entitled under the agreement to have every third night off and every third Sunday in consideration of their work in the ship canal, quoting that section 12 of the agreement made with them specifically provides that tugs carrying single crews shall have this time off. The crews, as stated, were in this instance double crews. This is the matter which the conference discussed, together with some collateral issues that grew out of it. President Livingstone's decision in the premises is expected to be final.

COMPLETES AN EXTRAORDINARY TRIP.

The new car ferry Pere Marquette No. 14 has just completed an extraordinary trip from Detroit to Port Huron. She was recently completed at the Orleans Street yards of the Detroit Ship Building Co. and is intended for service between Port Huron and Sarnia. Notwithstanding the fact that the river was blocked with ice it was determined to take her to her station at once. The trip amply demonstrated her ability as an ice crusher. She had not gone very far when her managers found that she was combating more than they had bargained for, and they were compelled to return to Detroit for additional coal supplies. After her second start it took her just one week to reach her station at Port Huron. Part of the trip was made stern first, she having lost one wheel and part of her shaft and also damaged her after rudder. However, as she is equipped with screws and rudders at both ends, it does not matter to her which goes first. The heaviest ice was encountered in Lake St. Clair, where it measured 32 in. in thickness, but this did not halt her any. It was only when she ran into windrowed ice that her progress was very slow. Capt. Egan, the master of the boat, thinks that she is the greatest ice crusher on the lakes.

Mr. J. J. Fraser, who was recently appointed commissioner of lights under the department of marine, has jurisdiction over the whole of the Dominion in regard to the operation and maintenance of the system of aids to navigation.

HARBOR OF REFUGE ON LAKE SUPERIOR.

Marquette is making a vigorous campaign for the improvement of its harbor and has now before it a project for the extension of its breakwater, principally for harbor refuge purposes. Mr. J. M. Longyear, who has been identified with Marquette and upper peninsula development for the last twenty-five years, is of the opinion that the extension of the breakwater will not give to Lake Superior carriers the protection which it really deserves. In a recent letter discussing the subject he observes that the tonnage on Lake Superior doubles every eight years and that there is no adequate shelter provided for it during stress of weather. He is therefore opposed to the extension of the breakwater at Marquette, and thinks it would be better to direct energies towards making a harbor of refuge at Partridge bay. Discussing the subject he says:

"The present harbor was designed at a time when the average cargo of vessels plying on Lake Superior was less than 400 tons. In 1903 the average cargo was over 1.865 tons. Since 1881 the number of vessels on Lake Superior has increased more than 4.6 times and the size has increased more than 4.76 times. The modern vessels on the lakes are 500 ft. long and a vessel needs at least three lengths in which to turn. The distance between No. 4 ore dock and the proposed 1,500-ft. extension of the present breakwater will be about 1,800 ft. So the proposed extension of 1,500 ft. will add about harbor room enough for one of the modern vessels to turn around in, if no other vessels are lying at anchor in that part of the harbor. One of these modern vessels, lying at anchor, will have out 300 ft. of anchor cable, so that when such a vessel swings she covers the segment of a circle the radius of which is 800 ft. A dozen such vessels, riding at anchor in Marquette harbor (including the proposed extension), would fill it so that it would be unsafe for another to enter.

"The number of vessels on Lake Superior doubles about every eight years, so that the number of vessels likely to seek shelter at Marquette will certainly be very much greater in the future than it has been in the past. The size of these vessels will also be much greater than those which have heretofore sought shelter in the harbor. The old, small types of vessels are rapidly being replaced by large vessels 400 and 500 ft. long. As many as thirty-two vessels, mostly, or all, of the old types, have been in Marquette harbor at one time during storms. It does not require much prophetic foresight to see a time when that many, or more, of the modern, large vessels will seek shelter at the same time at Marquette. When they do, not half of them can get in. A few days ago a type of large, steel vessels was built with large power, which were expected to 'stay out in any weather,' but I was recently told by one of the largest owners of lake vessels that the expense of operation more than offset their other advantages and that they had replaced the heavy machinery by lighter, which is found to be much more profitable. Said he, 'We tell our captains not to buck storms unless there is good reason for it, but to get into shelter and save coal.'

"This plan of operating, added to the certain increase in number and size of vessels on Lake Superior, makes it certain that very much more harbor room must be had at Marquette in the near future than can be provided for by any reasonable expense in extending the present harbor. What Marquette and the commerce of Lake Superior needs is a harbor adapted to modern requirements. That is the only harbor that will be of much benefit to Marquette.

"Several years ago I had an engineer prepare plans for a harbor at Partridge bay, where a harbor of 460 acres of water, 18 ft. deep and deeper, can be had for less than twice the cost of the proposed extension of the present Marquette breakwater, which will add only 74 acres to the harbor capacity of Marquette, as stated in the report of Engineer Dever, forming part of the report of the chief of engineers. At Partridge bay we could have more than five times the capacity for less than twice the money. Marquette needs a base to grow on, and the improvement of Partridge bay would give it such a base. The sand plain lying between Marquette and Partridge bay presents a field on which a commercial development of great extent could find room. By dredging, slips and wharves could be extended almost indefinitely. Dry docks, ship yards, steel works and other industries requiring room and ready access to harbor facilities could find place. Some, perhaps all, of these desirable enterprises must soon be established on Lake Superior. They may well come to Marquette if we are ready for them. If they should come now, what could we offer in the way of sites compared with some of our neighbors, who will not be backward in offering sites to such enterprises?

"The engineer's report speaks of the difficulties vessels have in turning into the present harbor after passing the breakwater in a storm. The gales from which vessels seek shelter at Marquette are from the north, northwest, or northeast, and a vessel coming in must turn to the north, after passing the breakwater, against the face of the wind and the undertow, or currents created by the storm. At Partridge bay the entrance to the proposed harbor, about 1,200 ft. wide, would be open to the northeast, so that a vessel coming in could come in before the gale and not be obliged to turn to get in. After entering the harbor there would be nearly a square mile of water to turn in. Engineer Dever also speaks of the abhorrence of vessel masters for the southwest shore of the bay at Marquette, and says that they run so close to the end of the present breakwater that they sometimes strike it. The proposed extension will make them run 1,500 ft. nearer the dreaded shore. The engineer's report also mentions the undertow which has always given so much trouble in the harbor during storms. This will not be remedied by extending the present breakwater. I have watched and studied these currents (undertow) during storms, in bays, in various parts of Lake Superior, and I am sure that the undertow will always be evident during storms as long as the wide end of the harbor is open. A long breakwater from the shore, extending out toward the present breakwater so as to leave a comparatively narrow opening, would probably stop the undertow. But that would cost many times as much as to make a much larger harbor at Partridge bay. My only objection to the proposed extenison of the present breakwater is that it prejudices the likelihood of our getting the improvement at Partridge bay, which would be of so much more value to the community and its business interests."

CANADIAN GRAIN TRANSPORTATION.

Mr. A. W. Edwards, United States consul general at Montreal, contributes the following report to the state department at Washington regarding Canadian grain transportation. He says:

The removal of the tolls on the Canadian canals has resulted in a heavy movement of corn over the Canadian lake route and thence down the St. Lawrence, as the exporters can now handle corn for 3 cents less a bushel than by the part-lake and part-rail route to Boston. A record of 1,000,000 bu. of corn within five days is the showing that the customs reports make for the amount of corn brought from Chicago to Montreal. The record, which is for the five days previous to Aug. 23, 1903, is more than 200,000 bu. greater than any amount ever handled in a similar period. The board of trade reports up to August show that during the present year (1903) 9,000,000 bu. of wheat and 4,500,000 bu. of corn have passed through the port of Montreal, as against a little more than 1,000,000 bu. of wheat and 4,000,000 bu. of corn shipped from Boston.

The railway discussion has drawn attention to the channels in which Canadian grain at present moves to the seaboard. From the little pamphlet compiled by the Northwestern Miller, the information is gleaned that last year there was shipped from the two Canadian Lake Superior ports Fort William and Port Arthur 35,525,798 bu. of grain. Of this total, 13,500,654 bu., or 38 per cent., was shipped to Buffalo and Port Huron, the balance—62 per cent.—going to Canadian ports as follows:

Owen Sound, 1,308,160 bu.; Midland, 8,316,972 bu.; Depot Harbor, 3,515,760 bu.; Point Edward, 192,904 bu.; Meaford, 972,684 bu.; Goderich, 2,759,484 bu.; Kingston, 4,985,176 bu.; total, 22,051,140 bu.

The following is the grain drawn from Duluth to Canadian ports: Owen Sound, 102,000 bu.; Midland, 1,633,000 bu.; Depot Harbor, 3,591,000 bu.; Meaford, 1,065,000 bu.; Quebec, 574,000 bu.; Goderich, 100,000 bu.; Kingston, 58,000 bu.; Port Sarnia, 19,000 bu.; total, 7,142,000 bu. In addition there was also handled 813,000 bu. of flaxseed.

Chicago shipped extensively to Canadian ports as follows: Montreal, 254,000 bu.; Depot Harbor, 4,691,000 bu.; Port Sarnia, 2,349,000 bu.; Midland, 3,707,000 bu.; Collingwood, 2,366,000 bu.; Meaford, 186,000 bu.; Goderich, 271,000 bu.; other Canadian ports, 81,000 bu.; total, 13,985,000 bu.

Altogether these two United States ports (Duluth and Chicago) shipped to Canadian ports 21,129,000 bu. of grain, as compared with 13,500,654 bu. shipped from the two Canadian ports (Port Arthur and Fort William) to American ports. In other words, almost 20 per cent. of the grain crop of the United States shipped by water from these two leading American inland ports passed through Canadian territory. The routes chosen are of interest; they were: Midland, 13,736,972 bu.; Depot Harbor, 11,797,760 bu.; Kingston, 5,043,176 bu.; Goderich, 3,130,484 bu.; Port Sarnia, 2,368,000 bu.; Collingwood, 2,366,000 bu.; Meaford, 2,223,684 bu.; Owen Sound, 1,410,160 bu.; Quebec, 574,000 bu.; Montreal, 254,000 bu.; Point Edward, 192,904 bu.; other Canadian ports, 81,000 bu.; total, 43,171,140 bu.

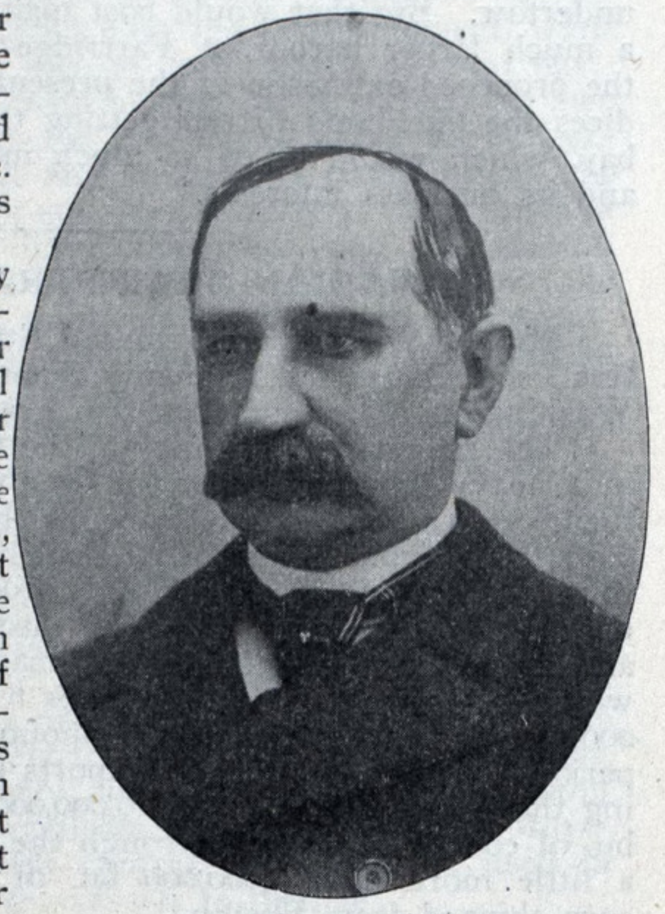
These figures show that 48 per cent. of the grain making use of the Canadian lake route is grown in the United States. Of course, not all these 43,171,140 bu. were exported. A considerable portion of the Canadian-grown grain was retained for home consumption. The grain exports from Canadian ports were: Montreal, 19,934,278 bu.; St. John's, 2,311,872 bu.; Quebec, 1,629,860 bu.; total, 23,876,010 bu.

The balance of twenty million odd bushels, less home consumption, as well as the twelve million odd bushels of Canadian grain sent into the United States via Buffalo, were exported as follows: New York, 7,733,993 bu.; Boston, 6,610,512 bu.; Portland, 5,896,078 bu.; Philadelphia, 1,555,938 bu.; Baltimore, 104,000 bu.; total, 21,900,521 bu.

There was, therefore, more Canadian grain exported from United States ports than from Canadian—in fact, nearly as much as was exported from Canadian ports of both American and Canadian—and the Canadian grain is a considerable item in the traffic of these American ports. Last year it supplied over 21 per cent. of the grain exports of New York, 40 per cent. of the grain shipments from Boston, and nearly 65 per cent. of the Portland shipments. A large number of very interesting deductions may be drawn from these figures. The most interesting is that the Canadian route apparently receives as much as it gives. It is estimated in the west that the grain acreage of Manitoba and the northwest territories is a full 20 per cent. above last year. Careful estimates give this year's acreage at more than 3,500,000 acres in Manitoba and the territories. Last year the wheat crop was estimated to have amounted to 65,000,000 bu.; so this season the most conservative estimate the prospective yield at 85,000,000.

ANNUAL MEETING GREAT LAKES TOWING CO.

Three points of interest are emphasized in the annual report of President Harry Coulby submitted to the stockholders of the Great Lakes Towing Co. at the annual meeting in New Jersey on Wednesday of this week. These are that competition has been practically eliminated, that prejudice against the company has been overcome and that the earning power of the company is now more than sufficient to pay dividends upon the preferred stock at its maximum rate. His report in full is as follows:



Mr. Edward Smith.

"I herewith submit my report covering the operations and condition of your company for the past fiscal year. Early in the year satisfactory contracts were entered into between the company and its employes, and I am pleased to report that our operations for the year have been carried on without labor troubles of any consequence. An independent line of tugs was established in competition with us at Buffalo at about the time of the strike last year, and by reason of our being unable to serve our customers last year, gained some strength. This line with a few scattered tugs at other ports, made a strong effort last spring to secure enough business to enable them to stay in the field, but owing to the advantages accruing to the vessel owner in doing all of his business with this company the most of our competitors found it unprofitable before the close of the season to continue their operations. The independent line at Buffalo owned three tugs, and when an opportunity presented itself to buy these tugs at a price not exceeding their cash value your executive committee deemed it wise to do so, leaving no competition at Buffalo. The only other competitor of consequence at ports where we operate was located at Toledo. A satisfactory working arrangement has been made with him, and I take pleasure in advising you that you are now practically free from any competition that can injure or demoralize the business. During the past year the company has disposed of several tugs, unsuitable for its work, in such a manner that they cannot be used for vessel towing in territory covered by us. The property belonging to the company has been well kept up, and I believe is in as good condition as at any time since the company began business. I have reason to believe that much of the prejudice against the company on account of the character of its organization has been overcome, and that the feeling of the most of our customers toward the company is much better than it has been at any time in the past.

"While we have had some quite large unusual and extraordinary expenses, and suffered some loss in net profits on account of the competition at Buffalo, I wish to call your attention to the fact that the net profits of the company for the past year are much larger than for any other year the company has been in business, and is good evidence that the earning power of the company is more than sufficient to pay dividends on the preferred stock at its maximum rate. Owing to the fact that a working capital has never been provided for the company your board of directors have thought it wise to let the year's profits remain in the treasury for the present, using them to pay off all floating indebtedness and to pay expenses during the non-operating months. In general the affairs of the company are in a very satisfactory condition, and a perusal of the treasurer's report will show that the company is in first-class financial condition."

The following directors were elected at the meeting: L. M. Bowers, James Davidson, R. R. Rhodes, C. E. Grover, Edward Smith, George A. Garretson, A. B. Wolvin, H. Coulby, T. F. Newman, D. Sullivan, James Ash, C. W. Elphicke, H. G. Dalton, L. C. Hanna and John A. McGraw. A meeting of the board of directors will be held shortly when officers will be elected. Mr. Coulby's place will undoubtedly be tendered to Mr. Edward Smith of Buffalo.

The report of the treasurer is as follows:

ASSETS.

Property account		$3,779,824 15
Accounts receivable		191,294 09
Bank balances	$1,351 36	
Cash balances	270 25	
Local managers disbursement funds	1,573 32	3,194 93
Merchandise and fuel on hand		13,729 63
First mortgage bonds owned		162,000 00
Insurance premium and interest paid, but unearned		1,939 91
Construction (Fairport shop)		157 87
		$4,152,140 58

LIABILITIES.

Preferred stock		$1,952,850 00
Common stock		1,675,000 00
First mortgage bonds, guaranteed		242,000 00
Bills payable		47,000 00
Accounts payable (nothing).		
Profit and loss—		
Balance 1902	$ 37,312 57	
Profit for 1903	177,917 62	215,230 19
Reserve—For final adjustment, accounts receivable and unadjusted damage claims		20,060 39
		$4,152,140 58

MASTERS PRESENT SCHEDULE—TRADE OUTLOOK.

Representatives of the Masters & Pilots' Association have presented to the executive committee of the Lake Carriers' Association a schedule of wages for the season of 1904. No action was taken upon the schedule, however, as the association is not at present ready to discuss the question of wages. Vessel owners are now engaged in analyzing the new schedule presented, and find that it is in certain instances higher than it was last year and in other instances it is lower. The scehdule advances the wages of masters and mates of the first-class steamers, but the figures work a reduction in the other classes. An advance is asked in the wages of mates of from $5 to $20 per month, the wages of mates on the first-class steamers being marked up only $5. From present indications the committee will be quite leisurely in reaching any conclusion upon the schedule as the owners are not at all inclined to enter into an agreement at the present time. Ore is moving forward from the docks so slowly that ample supplies are likely to be found upon them when the season of navigation is fairly well advanced. In fact, unless there should be a decided pick-up in consumption, the furnaces will be unable to burn up the supply already available. During the season of 1902 the Steel Corporation was in the market for approximately 6,500,000 tons, and it chartered last year something over 3,000,000 tons. Its stocks of ore are now so ample that it will probably handle all the ore it wants in its own vessels during the present year. It has even been hinted that the corporation may not put into commission its smaller class of vessels. At any rate the season does not look promising from the vessel owners' standpoint, which is the real reason why so much apathy is manifested towards wage schedules at the present time.

ABANDONMENT OF HUTCHINSON WITHDRAWN.

When the steamer John T. Hutchinson went on the rocks off Eagle River reef, Lake Superior, last November the owners promptly abandoned her to the underwriters as a constructive total loss. They were justified in doing this owing to the great peril in which the steamer stood. The story of the salvage of the steamer and her remarkable trip to Buffalo has already been told in these columns. She was insured for $210,000 of which amount $170,000 was placed straight with the American agents and the remaining $40,000 was disbursement insurance placed with foreign companies. The underwriters, while taking charge of the wrecking operations of the steamer, never accepted the abandonment. When the steamer reached Buffalo she was placed in dry dock and various estimates were made as to the cost of repairing her, the average being about $100,000. While the American companies are willing to admit a constructive total loss the English companies, which insured for total loss only, appear not to be willing to do so. It is the common opinion, however, that the repair and wrecking bills bring the steamer well within the accepted definition of constructive total loss. However, the underwriters could come to no agreement. The owners through Capt. Charles T. Hutchinson have now stepped in and withdrawn the abandonment. They have decided to take the steamer back and will have her repaired at the expense of the underwriters. It will be a big job to get her into shape by the opening of navigation.

CONTRACT MADE WITH DREDGEMEN.

After being in session for several days at Detroit, the Tug & Dredge Owners' Protective Association succeeded in making contracts with the dredgemen—that is, with the International Brotherhood of Steam Shovel & Dredge & Cranemen, and the International Brotherhood of Steam Shovel & Dredge Firemen, Linesmen & Deck Hands' Association. They did not succeed in entering into an agreement with the tugmen. The dredgemen have accepted the terms of last year's contract for the season of 1904. The contract calls for a twelve-hour day and thirty days to the month, extra time to be paid at the regular rate with the exception of Labor day and legal holidays, when double time is to be paid. No work is to be done on Sundays unless deemed necessary by the men in charge of the dredge. In case of disagreement a board of arbitration will have charge of all grievances. No agreement was entered into with the tugmen owing partly to a failure to adjust the hours of labor. The tugmen were willing to work a twelve-hour day, but in order to make the dredge work twelve hours as well it would be necessary for the tugmen to work longer than twelve hours, the tug, of course, having to tow the dredge to her station.

The Canadian Pacific railway is preparing plans for the construction of a new steamer to be placed on Trout Lake, B. C.

LOAD LINE BILL FOR CARGO VESSELS.

As an outcome of the agitation for a load line upon American vessels, Representative Small has introduced in congress the following bill which has been referred to the committee on merchant marine and fisheries:

"That the owners of every American vessel proceeding to sea from a port on the Atlantic or Pacific coasts or about to undertake a voyage upon the great lakes (except vessels under 300 tons register, vessels employed solely for fishing, and pleasure yachts) shall within sixty days after the enactment hereof, mark upon each of the sides of the said vessel, amidships, or as near thereto as is practicable, in white or yellow, on a dark ground, or in black on a light ground, a circular disc, 12 in. in diameter, with a horizontal line 18 in. in length drawn through its center.

"That the center of this disc shall be placed at such a level as may be approved by the local board of inspectors for the district, and shall indicate the maximum load line to which it shall be lawful to load the vessel.

"That if the vessel is so loaded as to submerge the center of the disc indicating the load line, the vessel shall be deemed to be an unseaworthy vessel, and such submersion shall be reasonable and probable cause for the detention of the vessel.

"That any owner or master of a vessel so required by this act to be marked who shall fail to cause his ship to be so marked, or to keep her so marked, or allows the ship to be so loaded as to submerge the center of the disc indicating the load line, or any person who shall conceal, remove, alter, deface, or obliterate any of the said marks, shall for such offense be liable to a fine not exceeding $1,000."

It is probably a little too early to discuss this measure, but it is not likely to be passed without vigorous opposition. On the great lakes, vessels are loaded in conformity with the maximum draught which the channels will allow. The modern carriers could be safely loaded well beyond the present limit, but of course the minimum depth of channel regulates the maximum load. It is probably true that some of the old wooden craft which were built when channels were shallower than they are now, endeavor to take advantage of added draught, but these are of a fast disappearing kind and no more of them are being built. No real necessity for this measure exists on the great lakes.

REMOVAL OF BRIDGE OVER CHICAGO RIVER.

A board of United States engineers has been named to consider the removal of the Illinois Central railway bridge near the mouth of the Chicago river. This board consists of Maj. James L. Lusk, stationed at Rock Island; Maj. J. G. Warren, stationed at Milwaukee, and Capt. C. S. Riche of the Chicago district. The board will hear the case at Col. Ernst's office in Chicago, on Feb. 23. Vesselmen are preparing to make a strenuous fight against the bridge before the engineers. The bridge so objectionable to vesselmen is located 1,400 ft. east of Rush street. It was formerly used by the Illinois Central railroad for switching its cars between the two piers, which are covered by a network of tracks, but the bridge has been out of repair and has not been used, vessel men claim, for a long time. A large warehouse has been built over the tracks on the south side of the river. Vessel men claim that since there has been a current in the river the structure has been a constant menace to ships. It divides the channel into two narrow parts, and when there is a crush of boats at this point serious delays result, and there have been many minor collisions. When a vessel is being loaded at the Central elevators the south draw is blocked, and the north draw is generally blocked by steamers at the docks of the New York Central, Lehigh Valley and Canadian Atlantic lines. Throughout the excursion season, when boats leave in a bunch in the morning and arrive together in the evening, the delays on account of the bridge are particularly annoying to passengers. If the decision of the board of engineers is against the railroad company the center pier must be removed and the channel dredged to a depth of 22 ft. The company will be given, however, if desired, permission to build a bascule bridge without a center pier at this point. The fight of the marine interests on the bridge has been going on for several years. Just before the retirement of Secretary Root from the war department it was thought the vessel men had won a victory, but one of his last official acts was to order a rehearing of the case before a board of engineers. This board has just been named to consider the issues involved.

PERE MARQUETTE NO. 19 NOT BADLY DAMAGED.

Capt. C. H. Sinclair, general manager of the Great Lakes Towing Co., has returned to Cleveland from Milwaukee, where he went to examine the big car ferry Pere Marquette No. 19, which is ashore on Fox point. The steamer stranded in a fog about two weeks ago. The car ferry struck just forward of the boiler bulkhead on the starboard side, and the break extends a considerable distance under the starboard boiler. Capt. Sinclair, however, does not think that the steamer is severely damaged and believes that she can be pulled off without much difficulty when the ice releases her. The hole in the boiler bulkhead will be plugged up with bags filled with oakum and pumps will be then put to work to relieve her of the water. Weather conditions have prevented any progress being made upon the steamer to any extent, Capt. Sinclair reporting that it takes the tug about an hour and a half to turn around in the ice.

AROUND THE GREAT LAKES.

Lincoln G. Lewis has been appointed to the position of general passenger and ticket agent of the Detroit & Cleveland Navigation Co.

C. W. Elphicke & Co. of Chicago announce the retirement of Mr. H. B. Earhart from the firm and the accession of Mr. J. J. Rardon to membership in it.

Owing to the floods and ice the steamer City of Benton Harbor building at Craig's ship yard, Toledo, for the Graham & Morton Co. will be completed on the stocks.

John B. Desruisseaux, one of the old time ship carpenters of the great lakes, died at his home in Detroit last week. He was well known in the days of wooden vessels.

The annual contract for dredging work on the Chicago river has been given to the Chicago & Great Lakes Dredging & Dock Co. by the drainage board at its bid of $231,610.

The Great Lakes Engineering Works has made arrangements to repair the damage to the Michigan Central car ferry Transfer by building a cofferdam around the stern and replacing the broken wheel after the cofferdam has been pumped out.

Capt. Martin T. Fleming of Detroit died last week at Tacoma, Wash. Capt. Fleming was well known along the great lakes, having sailed them for thirty years up to the time of his retirement ten years ago. His last command was his own steamer Coral.

The Lumber Carriers' Association and the delegates from the International Longshoremen's Association which met at Ashland last week failed to reach an agreement. The men wanted sixty cents an hour, while the association was willing to pay fifty cents.

Just prior to his illness Senator Hanna sent to the senate a bill to establish a naval training station at Put-in-Bay on Lake Erie. The bill appropriates $200,000 for the purpose. Senator Foraker introduced the measure for Senator Hanna and Representative Southward will introduce it in the house.

The work of lengthening and otherwise improving the steamer City of Buffalo of the Cleveland & Buffalo Line at Detroit is progressing satisfactorily. The severe weather has interfered somewhat with the work but the steamer will be ready for service by the opening of navigation. Nearly all of the bottom parts of the new center section are in place.

The committee from the Ship Masters' Association which had a hearing before the congressional committee on rivers and harbors regarding a harbor or refuge at Rogers City have returned from Washington and report that they met with such encouragement that they have good reasons to believe that a preliminary survey for such a harbor will be authorized at the present session of congress.

Capt. George P. McKay has been re-elected treasurer of the Lake Carriers' Association, and Mr. T. W. Kennedy, of Buffalo, has been re-appointed superintendent of the handling of grain at that point. Mr. A. R. Rumsey of Cleveland, will continue as chief shipping master and will have charge of all the shipping offices. The office of secretary of the Lake Carriers' Association was offered to Mr. Harvey L. Brown, of Buffalo, but it is not likely that he will accept as the association desires the secretary to take up his office in Cleveland.

Many wooden vessels are receiving extensive repairs at Marine City. At A. P. Kenyon's yard the steamer A. D. Hayward is receiving a thorough rebuild and it is claimed that when the job is completed she will be as good as new. The vessel is being equipped with new beams, new decks from the forward cabin to the after cabin and is being recalked all over. New rigging is also being placed. New bows are being built on the steamer Brittanic and she is being made a flush decker; that is, her deck is being raised to the top of her rail, which will give her considerably more cargo space. The Brittanic is also being recalked from the water line up. The steamer George King is receiving new floors and extra timbers under them so as to add more strength to her bottom. She is also receiving a new rail and new stanchions from the forward to after cabin, and is being recalked. The steamer Gogebic is being equipped with new beams forward, and all her old iron will give place to a new outfit. Her forward deck is also being reconstructed and she will be thoroughly recalked. The barge Grace Whitney, whose bones came very near resting on the beach north of Fort Gratiot last season, is also at Marine City for new spars and other repairs. In addition to the above the steamers Havana and Sawyer, barges Anderson, Sparta and Redfern are being repaired, with a few others to arrive in the spring.

During the present year bids will be asked by the French government at Nantes for about $450,000 worth of dredging machinery to be used in deepening the channel of the River Loire between Nantes and St. Nazaire. The government engineer at Nantes, whose department is charged with the supervision and possibly with the execution of the work, says that it has not yet been finally decided as to whether bids for furnishing this machinery will be received from foreigners, but he thinks they will.

A bill has been introduced in congress authorizing the secretary of the navy to employ dental surgeons to serve the officers and enlisted men of the navy and marine corps. The proportion is not to exceed one for every 1,000, and not to exceed thirty in all.

SEEN AND HEARD ON THE LOOKOUT.

According to a French marine journal it is improbable that naval architects of the future will be able to improve on the design of the present day modern vessel. The ugly tramp steamer, the graceful yacht, the swift liner and the clumsy barge represent the most advantageous vehicles for the different phases of water transportation. All the maritime nations having, as it were, become proficient in the art of swimming, have of late years devoted more time to investigate the mysteries of diving. A great many years ago, it is true, haphazard attempts had already been made to travel under water. For instance, it was during the revolution that an American—I forgot his name—constructed a submarine boat. The crew consisted of the inventor and one man, the latter working the hand-turned propeller. In those days, however, this invention appears to have made very little impression, and the people were more interested in a craft that gave promise of an ability to remain afloat on the surface than in one that could perform such an uncalled for feat as diving. Since speaking with an enthusiast on this subject I still retain the impression that a 2,000-mile submarine trip in a duplicate of Jules Verne's Nautilus, as well as the project of submarine rapid transit, must be indefinitely postponed. Storage cells readily can supply the necessary light within the vessel; foul air may be pumped overboard and a fresh supply drawn from the storage tanks, but a selection of the engine for propulsion is the difficult task. Every practical power for turning a propeller uses air in its generation, and a most economic expenditure of air is obviously of vital interest to the crew of a submerged craft. Advocates of the use of gasoline motors forget that air is required for each explosion. Submarine craft must necessarily be slow until a type of engine has been invented which, like the inhabitants of the moon, can perform its allotted task without an ever available base of air supply. England did not at once agree with the prediction that submarine torpedo boats might revolutionize naval warfare. But then that country, as the greatest naval power, must obviously object to an instrument of destruction that shows a tendency to equalize her own chance of victory with an inferior force. England's position in this matter was similar to that of diplomatists whose business it is to predict peace, however threatening the war cloud. The French government took kindly to the submarine from its inception, and as the power that is called the second as regards naval strength this might have been foretold. In France submarine boats use a petroleum engine when running on the surface, and storage battery electricity during a submerged run. The American, or Holland boats, have gasoline motors and stored electricity when proceeding under water. In these boats a dynamo is run by the gasoline engine while on the surface, and thus sufficient electricity is stored for a comparatively lengthy run under water. It has as yet not been possible to light the water ahead of the boat when running submerged, and in this matter inventors appear thus far wholly in the dark. Though difficult to handle the round-shaped craft is best able to withstand pressure when at a great depth. France possesses a perfectly round boat, and her name, Travailleur sous Marin, or Submarine Worker, explains the nature of her calling.

The various comments anent the Russian and Japanese engagements, besides illustrating the truth of the Dutch proverb, "The best helmsman stands on shore," reveal the presence of numerous naval strategists in neutral countries. Incidentally I may confess that I am not versed in the art of war, and thus refrain from giving an opinion regarding the class between men-of-war in the far east. It has been noticed, however, that the greatest naval powers never hesitate to copy improvements adopted by even their most insignificant rivals. And a failure to carefully investigate new devices for facilitating work on shipboard would ultimately result in forcing a power from its place as the most progressive, the best, the greatest. Modern machinery, electrical appliances and the latest devices for successfully fighting afloat make it incumbent upon naval officials to incessantly train and improve the personnel of their ships. For instance, when Holland, at present insignificant among naval powers, deemed it advisable to abolish the practice of flogging the crews of her men-of-war, England speedily did likewise when it was proved to act beneficially on the moral tone of the enlisted men. Not many years ago, when in East India weaving garlands of verbal blossoms anent a tribal war in the island of Sumatra, I had occasion to go on board an English sailing vessel at anchor off Oleh-leh. While talking with the captain three straw hats were observed floating in our direction and a boat was hastily lowered upon the discovery that each of these hats covered the head of a nude white man. Brought on board and provided with such garments as the sailors cared to bestow, the rescued trio's lingual abilities proved insufficient to explain the cause of their predicament. The arrival of a gig from the Russian man-of-war that was anchored in close proximity of the Englishman brought the explanation. A Russian officer, speaking French as if the "Quartier Latin" had been his stamping ground, identified these men as members of his crew who, in anticipation of a promised flogging, had attempted to escape its realization by swimming. Having witnessed the flogging of the men in question, I must, without describing the revolting scene, pronounce the procedure as debasing, degrading and brutalizing. And the entire crew was compelled to witness the spectacle as an incentive to abstain from being guilty of an infraction of some rule. As said before, I am unable to compare the Russian and Japanese navies as regards efficiency, armament or progressiveness. It is worthy of note, however, that in the Japanese navy the practice of flogging, or otherwise abusing the men, does not obtain.

During this exceptionally severe weather none have suffered more than the fishermen. The loss of two fishing schooners on the Newfoundland coast was reported recently. It now transpired that these schooners were not pursuing their regular calling, but were purchasing cargoes from Newfoundland fishermen. Bait, that so necessary adjunct to a fisherman's outfit, is very scarce along the American coast, and it was during an attempt to rush a load of bait to Gloucester that the two vessels were wrecked. Up to November numerous craft engage in the herring fishery off Newfoundland, stowing the fish into the holds closely packed between layers of salt. The cleaning of the fish is done upon the vessel's arrival in the home port. But from December till March the frost kindly consents to act as substitute for the salt in the preservation of the fish. And it is only when a long spell of extremely cold weather promises to set in, when the juices may be retained in the frozen herring, that some of the ablest vessels of Gloucester's fishing fleet go in quest of bait. With the mercury many degrees below zero a herring exposed for twenty-four hours is said to retain the particular flavor so necessary in the bait for fastidious fish. While Newfoundlanders catch these herrings American schooners purchase many loads of them. On account of the tariff law foreign vessels can not bring bait in American harbors, but the United States authorities allow the purchased bait to pass unchallenged when brought in bottoms under the stars and stripes. The vessels engaged in this bait carrying trade are always supplied with heavy mallets. If it be known that these mallets are intended to be used in freeing the craft from the incessantly accumulating ice along the decks, the danger, to say nothing further of the discomfort, of a mid-winter trip on a low craft to the most perilous coast can be readily imagined. Many of these vessels are known to have foundered when the tired crew was unable to relieve their boat of the weight of the ever faster accumulating ice. It is said in Gloucester that Newfoundland "bait-drovers" turn in "all standing," and thus we know that these men, after working long hours on icy decks, are even barred from enjoying the temporary luxury of sleeping in a natural state of undress.

It is, of course, impossible to have a medical practitioner on board every tramp steamer. As a general thing seafaring men are healthy; with the help of the so-called "doctor's book" a captain can select the appropriate pill or powder from the medicine chest, and the nearest hospital is now seldom more than a few dog watches distant. On passenger vessels, and more especially immigrant boats, the presence of a doctor is no longer classed with the luxuries of ocean traveling. The ship doctor's salary varies according to the flag under which he sails and the arrangement he makes with the managers of the steamboat company. One steamboat line, for instance, which maintains a weekly service between New York and Europe, pays the doctors only a very meager salary. For each passenger, however, that is brought over in a fairly good state of preservation the company pays the doctor two cents. As an incentive for the medical man to carefully diagnose a complaint two cents may appear ridiculously inadequate in the eyes of a suffering passenger. But on those swift steamers, carrying multitudes, the two-cent fee for every passenger he fails to kill must certainly count up to a considerable sum annually. In this connection the story is told of a sailor on board a liner who, being in need of the doctor's services, sent his shipmate aft with the following note: "Please, doctor, save your pennies by saving my bacon." And now these doctors have a grievance. For the salary paid them by the company they are willing to prescribe for any passenger whose sickness had its inception on shipboard. For instance, unfortunates suffering from seasickness will be treated by the ship's doctor free of charge, because their distress is caused by the deplorably uneven surface of the steamship company's highway. But passengers who are ill when boarding the steamer, and who by taking passage expected to receive free medical treatment, may soon find to their sorrow that they reckoned without the doctor.

F. H.

AUSTRIAN MERCHANT MARINE.

Editor Marine Review: The transformation and growth of Austria's merchant marine is shown in the following figures, published in Les Annales Diplomatiques et Consulaires of Dec. 5, 1903:

	Number.	Tonnage
Steam vessels.		
1882	86	72,511
1892	107	102,315
1902	191	323,841
Sailing vessels.		
1882	344	147,574
1892	214	94,332
1902	44	24,912

Is it not fair to assume that this great growth in steam vessels is largely attributable to $1,624,000 subsidy granted to the Austrian Lloyd, and to the protective measures put in force by the "parliament of Austria"?

WALTER J. BALLARD.

Schenectady, Feb. 18.

The name of the City of Charlevoix, owned by the Northern Transportation Co., is to be changed to Kansas.

STEAM TONNAGE IN THE ASCENDANCY.

Lloyd's summary of ship building throughout the world during 1903 is now at hand. It shows that, exclusive of warships, 697 vessels of 1,190,618 tons gross (632 steamers of 1,165,503 tons and sixty-five sailing ships of 25,115 tons) were launched in the United Kingdom. The warships launched at both government and private yards amount to forty-one of 151,800 tons displacement. The total output for the United Kingdom for the year, was therefore, 738 vessels of 1,342,508 tons. The output of mercantile tonnage in the United Kingdom during 1903 shows a decrease of 237,000 tons from last year, and is the lowest since 1897. Compared with the returns for 1901, when the output of both mercantile and war tonnage reached the highest level, the present figures show a reduction of 334,000 tons as regards merchant vessels, and 60,000 tons as regards war vessels. It may be mentioned that 99¾ per cent. of the tonnage launched has been built of steel, and that nearly 98 per cent. is composed of steam tonnage. Of the total output, 936,776 steam tons and 13,800 sailing tons, or 950,576 tons in all (80 per cent.) belong to ports in the United Kingdom. In this connection, it should be noted that the losses, etc., of United Kingdom vessels during twelve months are shown by Lloyd's register wreck returns to average 258,200 tons (202,700 steam, 55,500 sail). Sales to foreign and colonial owners for the twelve months ended November, 1903, reached a total of 352,000 tons (294,000 steam, 58,000 sail). On the other hand, purchases from foreign and colonial owners during the same period amounted to 65,000 tons (57,000 steam, 8,000 sail). The sailing tonnage of the United Kingdom would thus appear to have decreased by about 92,000 tons, while the steam tonnage has increased by 497,000 tons. The net increase of United Kingdom tonnage during 1903 is therefore about 405,000 tons. For the last four years the estimated net increases were as follows: 1899, 313,000 tons; 1900, 220,000 tons; 1901, 543,000 tons; 1902, 643,000 tons.

In 1903, 18 per cent. of the total output has been acquired by foreign and colonial ship owners, as compared with 18 per cent. in 1902, 23 per cent. in both 1901 and 1900, 19 per cent. in 1899, 22 per cent. in 1898, and 25 per cent. in 1897. The British colonies have provided the largest amount of work for the ship builders of the United Kingdom, viz.: Thirty vessels of 33,793 tons (2.8 per cent. of the total output). Germany follows with nine vessels of 26,598 tons. Next come Norway with 25,813 tons, and Holland with 18,153 tons.

The annual ship building statistics of Lloyd's register during recent years have illustrated the tendency towards the construction of steamers of large tonnage. During the four years, 1892-5, on an average eight vessels of 6,000 tons and upwards were launched per annum in the United Kingdom; in the following four years, 1896-9, the average rose to twenty-five; for the last four years, 1900-3, the average has been thirty-nine. Of vessels of 10,000 tons and upwards, only three were launched in the four years 1892-5; seventeen were launched during the four years 1896-9; and thirty-two have been launched during the four years 1900-3. The largest steamers which have been launched during 1903 are the following: Baltic, 23,763 tons gross; (not named), 16,780; (not named), 16,780; Republic, 15,378; Kenilworth Castle, 13,150; Armadale Castle, 12,800; Macedonia, 10,523; Marmora, 10,523.

The largest sailing vessel which has been launched in the United Kingdom during 1903 is the Mneme, of 2,456 tons.

Of the principal ship building centers of the country, Glasgow takes the lead, showing an output of 239,947 tons. Then follow in order Newcastle, 219,360 tons; Sunderland, 189,500 tons; Belfast, 156,859 tons; Greenock, 124,359 tons; Middlesbro', 91,675 tons, and Hartlepool, 80,808 tons. In warship tonnage the leading ports stand thus: Glasgow, 54,200 tons; Newcastle, 33,825 tons, and Barrow, 28,750 tons.

In view of the general interest which is felt in the increasing employment of the turbine method of propulsion, it will be well to record the names of the steamers fitted with turbines which have been launched during 1903. They are as follows: Amethyst, 3,000 tons displacement; Eden, 565; Lorena, 1,303; The Queen, 1,676; Brighton, 1,129.

In addition, the returns for the year under review include 145 steam trawlers and other fishing vessels; sixty-five dredgers, barges, etc.; twenty-five yachts; twenty-five tugs; six vessels intended to carry oil in bulk; and other vessels designed for special service.

As regards the movements of the ship building industry during the course of 1903, Lloyd's register returns show that, at the opening of the year, irrespective of war ships, 1,024,067 tons (1,001,739 steam, 22,328 sail), were being built in the United Kingdom. The returns for the March quarter indicated a reduction of 49,000 tons in the work in hand, but the June returns regained the previous level. By the end of September, however, the figures had fallen 117,000 tons short of those with which the year opened, and at the present time the work in progress (viz., 898,478 tons) is less by 125,000 tons, or 12 per cent., than it was twelve months ago. As compared with the work in hand in September, 1901, when the highest figures recorded in the history of the ship building industry were reached, the tonnage now under construction is less by 515,000 tons, or about 36½ per cent. As regards the amount of war ship tonnage under construction in the country, the highest total recorded by Lloyd's register was reached in March, 1900, when 454,000 tons displacement were in hand. The total is now 309,510 tons.

There have been built abroad, during the year, 549 steamers of 798,205 tons and 404 sailing vessels of 156,808 tons, in addition to seventy-eight war vessels of 239,210 tons displacement. Among foreign countries, the three leading places are held by the United States of America (382,000 tons), Germany (184,000 tons), and France (93,000 tons).

Of the mercantile tonnage reported from the United States, a considerable proportion does not affect the general commerce of the world, being intended for service on the great lakes. As showing the size of vessels employed in that trade, it may be mentioned that twenty-four steamers have been built for it during 1903 of upwards of 4,000 tons each, while seven others range between 3,000 and 4,000 tons. On the coast, nine steamers of over 4,000 tons each, besides six steel and three wooden sailing vessels of over 2,000 tons each, have been launched. The largest steamers included in these figures are the following: Minnesota, 21,000 tons gross; Mongolia, 13,638; Manchuria, 13,638; Maine, 7,914; Missouri, 7,914. These five vessels have all been built under the survey of Lloyd's register.

Germany has launched one steamer exceeding 8,000 tons, viz.: the Gneisenau of 8,081 tons, built at Stettin, and thirteen steamers between 4,000 and 8,000 tons. The only important sailing vessel included in the output of Germany during the year is the four-masted barque Petschili of 3,087 tons, built at Hamburg, under the survey of Lloyd's register.

The most significant feature, in respect of the ship building industry in France during 1903, has been the abandonment of the construction of large sailing vessels. During the years 1899 to 1902, the numbers of steel sailing vessels of 2,000 tons and upwards launched in France were respectively twenty-four, thirty-eight, forty-nine and fifty-four. During 1903, not one such vessel has been launched, neither is any now under construction. On the other hand, the steam tonnage launched in France during 1903 amounts to 83,000 tons, or 38,000 tons in excess of the output of 1902. At the present time the steam tonnage under construction in France reaches a total of 105,000 tons, as compared with 77,000 tons at the end of 1902, and 59,000 tons at the end of 1901.

The total output of the world during 1903 (exclusive of war ships) appears to have been about 2,146,000 tons (1,964,000 steam, 182,000 sail). Lloyd's register wreck returns show that the tonnage of all nationalities totally lost, broken up, etc., in the course of twelve months amounts to about 744,000 tons (419,000 steam, 325,000 sail). The net increase of the world's mercantile tonnage during 1903 is thus about 1,402,000 tons. Sailing tonnage has been reduced by 143,000 tons, while steam tonnage has increased by 1,545,000 tons.

Compared with the net increase for the world, the net increase of 405,000 tons, as stated above, for the United Kingdom is equivalent to nearly 29 per cent. In the net increase of the world's *steam* tonnage, viz., 1,545,000 tons, the United Kingdom has shared to the extent of 497,000 tons, or over 32 per cent. Of the tonnage launched during 1903, the United Kingdom has acquired over 44 per cent.; and of the new *steam* tonnage the United Kingdom has acquired nearly 48 per cent.

SHIP CONSTRUCTION IN THE UNITED KINGDOM.

From the returns compiled by Lloyd's register of shipping, it appears that, excluding war ships, there were 386 vessels of 898,478 tons gross under construction in the United Kingdom at the close of the quarter ended Dec. 31, 1903. The particulars of the vessels in question are as follows, similar details being given for the corresponding period in 1902 for the purpose of comparison:

	Dec. 31, 1903.		Dec. 31, 1902.	
Description.	No.	Gross Tonnage.	No.	Gross Tonnage.
Steam.				
Steel	332	874,930	347	1,001,104
Iron	..	.....	2	395
Wood and Composite.	2	390	2	240
Total	334	875,320	351	1,001,739
Sail.				
Steel.	29	20,830	17	19,858
Iron	1	260	3	780
Wood and Composite.	22	2,068	16	1,690
Total	52	23,158	36	22,328
Total Steam and Sail.	386	898,478	387	1,024,067

The tonnage under construction is now about 8,000 tons less than it was at the end of September, 1903. Compared, however, with the total reached in September, 1901, which is the highest on record, the present figures show a reduction of 515,000 tons, or over 36 per cent. Of the vessels under construction in the United Kingdom at the end of December, 295 of 638,560 tons are under the supervision of the surveyors of Lloyd's register with a view to classification by the society. In addition, sixty-eight vessels of 208,025 tons are building abroad with a view to classification. The total building at the present time under the supervision of Lloyd's register is, thus, 363 vessels of 846,585 tons.

The following sales of vessels have been made by Capt. L. E. King of Cleveland: Steamer Ogeman, from Murphy & Co., Ltd., of Detroit, to W. E. Pierce, West Bay City, Mich.; steamer Denton, from W. E. Pierce, West Bay City, to C. C. Baumhart, Vermillion, O.; schooner M. R. Wilcox, from Murphy & Co., Ltd., Detroit, to C. C. Baumhart, Vermillion.

JAPANESE-RUSSIAN WAR AND MARINE INSURANCE.

BY AN OCCASIONAL CORRESPONDENT.

Up to Dec. 20, last, the crisis in the negotiations between Russia and Japan did not greatly influence the operations of underwriters, as far as can be ascertained from published reports. The conflicting news which had been received for many months prior to October had brought about a general feeling of scepticism, and neither shippers nor underwriters appeared to believe that war was imminent. In the last-named month, there were shipments of coal from England to the far east, and these were insured freely at 1 per cent. for the risks of capture, seizure and detention, in addition to the ordinary premium for marine risks. These shipments were in British vessels. Most of these risks "ran off" about the end of the first week in January, and most war-risk insurances which have since been written date from the middle of December. By agreement between British underwriters of hulls and cargoes, all policies written during the past five years contain the "free of capture and seizure" clause, and war risks are under this clause specifically excluded, except by agreement in individual cases, in return for definite premiums. By this arrangement—both desirable and prudent—underwriters are relieved from being caught at the beginning of a war with large and unconsidered liabilities arising from the risks of capture, and are in a position to make their own terms with shippers and shipowners in regard to the special risks due to actual or impending hostilities. About Dec. 20, shippers of cargoes to the far east became seriously alarmed, and it became necessary for them in their own interest to get the risks of capture, seizure, or detention covered by underwriters. The cargoes chiefly affected seem to have been ordinary shipments to Japan in Japanese steamers, coal loaded in England in British steamers, rice in British steamers shipped at Rangoon (Lower Burma), and provisions of various kinds ordered by Japan from the United States, Australia, and other countries, and shipped for Japan, principally in neutral vessels. Cargoes under the Japanese flag are, of course, liable to seizure in the event of war, and coal and provisions, although not contraband according to international law, may be declared to be so, or, at least, may be liable to detention, and in that way bring about the liabilities of underwriters for them. Moreover, a state of war implies the removal of buoys and lights at the hostile ports, and the marine risks thus occasioned all come within the perils underwriters must meet under "all risk" policies. The feeling of apprehension common among marine insurance experts may be seen from the way in which rates have advanced. The great Japanese shipping company—Nippon Yusen Kaisha—wished to cover by its own agency the war risks of cargoes in its own vessels, and, to do so, it has obtained large floating policies. These were first written about the last week in November at $1.25 per cent. for the war risk, but when renewals were made during the first week of January (in London), $7.50 per cent. were demanded and paid. At this time many underwriters refused to accept the risk of capture of cargoes in the Nippon Company's ships, leaving any port, for less than $10 per cent., and every day for a couple of weeks brought an increase of rates. These high prices upon shipments in Japanese ships caused much freight to be transferred to neutral flags, chiefly British, where the risks of capture or detention have been freely covered at $1.25 per cent. Large rice shipments from Rangoon to Japan in first-class British steamers have been arranged for the coming month and for March. These could be insured against war risks before Christmas at $1.75 per cent., but during the week ending Jan. 9, as much as $10 was paid, and a common rate asked and received was $8. This may be accepted as the rate at the present time chargeable upon provisions for Japan in neutral vessels, but shipments from this country *via* the Pacific have been written at much less, owing to the safer voyage. It must, of course, be remembered that experience has shown that the risks of capture, detention, or loss through the absence of buoys and lights occur near the ports of belligerents, and that the preliminary part of most voyages is influenced in a trivial degree or not at all. Coal in British steamers for Japan is now being shipped in considerable quantities from Cardiff, and the rates for the risk of capture have advanced to $15 per cent., and as much as $20 has been paid. The rates mentioned in this article are in all cases those paid in the belief that hostilities were inevitable, and some experienced underwriters in London are reported to have asserted that actual war would not bring about a very large advance, although it might cause some temporary rise.

Practically all marine underwriters, whether representing individuals or companies, are compelled to write war risks on cargoes, in order to do business, but some, of course, do this class of insurance much more freely than others. Some of the strongest marine companies will not do any more of it than they feel absolutely obliged to do, except at very high premiums, and at present there is much holding aloof on their part. But large shipments are being sent from Chicago—as well as from various European cities—and shippers must be protected. It is the business of underwriters to protect them. War risks are necessarily speculative, because all exact data are absent until facts have been ascertained in the particular war, and the preliminary insurances, which have been written during the first two months, have chiefly been arranged at Lloyds—in London—where underwriters appear to have a freer hand than elsewhere—in New York, for example—where they are under the control of directors, and are subject, sooner or later, to the criticisms of anxious stockholders.

BIG NAVAL PROGRAM.

A big naval program is recommended by the house committee on naval affairs in its report to congress. The committee also recommends that discretion be given to the secretary of the navy to build any or all of the war ships in navy yards if it appears that any of the ship building companies have entered into any combination to restrict competition. This seems an unnecessary safeguard. It is doubtful if any of the ship building companies have made much money in naval work. In point of fact, on certain classes of it, especially torpedo boats, they have lost money heavily. The report says:

"The committee recommend the construction of more than the usual number of cruisers in view of the fact that last year we provided for five large battleships. This will give a better proportion to our navy. If we judge public sentiment aright, it is in favor of the continuance of the policy of building up our navy. If we stopped now we would be left behind the leading countries of the world. The American people will not introduce the policy of sacrificing the American navy for internal improvements, nor is there any such necessity. Foremost and above all must stand considerations of national defense, maintenance of our foreign policies, and protection of American citizens everywhere. The American people are not willing to lessen their influence on this hemisphere nor forsake their interests on the other."

The appropriation for new ships, as well as the completion of those now under construction, is dealt with in the report as follows:

"To complete all the ships authorized up to the present time, including their construction and machinery, armor and armament and equipment, will cost $82,718,659, which may be divided as follows:

Construction and machinery	$46,532,450
Armor and armament	35,786,209
Equipment	400,000

"Of this sum we appropriate in this bill $19,826,860 for construction and machinery and $12,000,000 for armor and armament, making a total of $31,826,860, which leaves a balance of $50,891,699 to be appropriated hereafter."

The ships authorized are: One first class battleship of 16,000 tons; cost, $7,775,000; two first class armored cruisers of 14,500 tons; cost (each), $6,505,000; three scout cruisers of not more than 3,750 tons; cost (each), $2,200,000; two colliers, to be capable of accompanying the battle fleet, to carry 5,000 tons of cargo coal; total cost (each), $1,250,000.

The total cost of the above program will be $29,885,000. It is left within the discretion of the secretary of the navy to build any or all of these ships in government yards in case it shall appear that the ship building concerns have entered into any combination or understanding to deprive the government of fair and unrestricted competition in letting contracts for the construction of any of these vessels. It is said that the greatest naval problem of the day is the training of men for the navy. An increase of 3,000 men is provided for, and a training station on the great lakes is recommended. When this station is completed and the facilities for training men are increased, a larger yearly increase will be demanded. The report gives in detail, illustrated with colored plates, the strength of the various navies of the world. The total amount of the bill is $96,338,038. A text for discussion of the Panama canal question is furnished by Mr. Foss in his comments on the necessity for a naval station in Cuba. After stating the items in the appropriation for this work, amounting to $385,000, Mr. Foss speaks of Guantanamo as follows:

"It could not be better located to conserve the interests of our country on this hemisphere—first, for the protection of our interests in the West Indies; second, for the defense of the Panama canal; third, for the maintenance of the Monroe doctrine."

As to the necessity of the proposed naval station at Olongapo, P. I., for which the bill carries $862,395, Mr. Foss says:

"In view of our great interests in the east, 7,000 miles away from home, with a single fleet there at all times to protect those interests, it would seem almost criminal negligence on the part of congress not to provide a naval station where our ships could be docked and repaired. The rapidly developing complications of the whole eastern situation demand that our navy should be made as effective as possible."

The report says that "the work of building up the naval academy is proceeding in a very satisfactory manner. The seamanship building and the armory are completed, the marine engineering and naval construction building will be completed within three or four months, the main quarters for the midshipmen will be completed by September next and the other buildings are progressing well. We have already appropriated $5,070,000, and $3,000,000 is recommended for this year, making in all $8,070,000 of the $10,000,000 which is the total cost fixed for the complete building of the academy."

The largest searchlight in the world has just been completed and tested by the General Electric Co. at Schenectady, N. Y. It is of 5,250,000 candle power and projects a beam of light 7 ft. in diameter. It will be used for advertising purposes at the Louisiana purchase exposition.

The Elder-Dempster Co. has announced that a new steamer, to be called the Canada-Cape, will be launched shortly for the Canada-Cape of Good Hope line, and that in future the service will be carried on by four steamers.

CONSUMPTION OF PIG IRON IN 1902 AND 1903.

The consumption of pig iron in the United States in the last two years is approximately shown in the following table. The comparatively small quantity of foreign pig iron held in bonded warehouses has not been considered. Stocks in foundry yards and in the yards of producers who do not sell their pig iron, always unknown quantities, are necessarily excluded. So also are the stocks held by rolling mills and steel works whose owners do not make pig iron. Warrant stocks are included in unsold stocks.

Pig iron—Gross tons.	1902.	1903.
Domestic production	17,821,307	18,009,252
Imported	625,383	599,574
Stocks unsold Jan. 1	73,647	49,951
Total supply	18,520,337	18,658,777
Deduct stocks Dec. 31	49,951	598,489
Also exports	27,487	20,381
Approximate consumption	18,442,899	18,039,907

It will be observed that, while the production of pig iron in 1903 shows an *increase* of 187,945 tons over 1902, the consumption shows a *decrease* of 402,992 tons. The significant fact that the imports of pig iron in 1903 were almost exactly the same as the unsold stocks on hand at the close of the year will not escape attention.

Calculated in the same way as in the table the consumption of pig iron in 1901 amounted to 16,232,446 tons, as compared with 13,177,409 tons in 1900, 13,779,442 tons in 1899, and 12,005,674 tons in 1898. The increase in consumption in 1902 over 1901 amounted to 2,210,453 tons, and in 1901 over 1900 to 3,055,037 tons. In 1900 there was a considerable decrease in consumption as compared with 1899, the falling off amounting to 602,033 tons, while in 1899 the increase in consumption over 1898 amounted to 1,773,768 tons. Below is a table which gives the consumption in the last six years.

Years.	Tons.
1898	12,005,674
1899	13,779,442
1900	13,177,409
1901	16,232,446
1902	18,442,899
1903	18,039,907

Capt. H. H. Parsons of Detroit, Mich., has been engaged by the Toledo White Lead Co. to represent them as marine salesman.

PIG IRON PRODUCTION IN CANADA.

The American Iron and Steel Association has received direct from the manufacturers the statistics of the production of all kinds of pig iron in Canada in the calendar year 1903. They show a decrease of 54,139 gross tons, or nearly 17 per cent., as compared with 1902, but an increase of 20,442 tons as compared with 1901. The total production in 1903 amounted to 265,418 gross tons, against 319,557 tons in 1902, 244,976 tons in 1901, and 86,090 tons in 1900. In the first half of 1903 the production was 132,930 tons, and in the second half it was 132,488 tons, a falling off of only 442 tons. Of the total production in 1903, 247,905 tons were made with coke and 17,513 tons with charcoal. Nearly one-half of the total production was basic pig iron, namely, 126,892 tons. Less than 1,000 tons of Bessemer iron were made. Spiegeleisen and ferromanganese have not been made since 1899. The following table gives the total production of all kinds of pig iron (including spiegeleisen and ferromanganese) in Canada from 1894 to 1903. Prior to 1894 the statistics of pig iron production in Canada were not collected by the association.

Years.	Gross tons.	Years.	Gross tons.
1894	44,791	1899	94,077
1895	37,829	1900	86,090
1896	60,030	1903	265,418
1897	53,796	1902	319,557
1898	68,755	1901	244,976

The unsold stocks of pig iron in Canada on Dec. 31 amounted to 19,168 tons. On Dec. 31, 1903, Canada had fifteen completed blast furnaces, of which nine were in blast and six were idle. Of this total eleven were equipped to use coke for fuel and four to use charcoal. In addition three coke furnaces and one charcoal furnace were being built or were partly erected on Dec. 31, but work on at least two of the furnaces had been suspended some time ago.

The second edition of catalogue No. 115, the general condensed catalogue of the B. F. Sturtevant Co., Boston, Mass., is now ready for distribution. This catalogue describes and illustrates a number of new apparatus manufactured by this enterprising company, among which are a new type of hand-blower; several new types and sizes of forges; new sizes of vertical single and double engines; a new type of enclosed vertical compound engines; new type of semi-enclosed bi-polar and four-pole motors; new sizes of generating sets with vertical compound engines; factory equipments, such as bench-legs, pattern storage shelf brackets, electric hoists, cast iron sinks, trench cover-plates, etc.; industrial railway equipments, such as cars, truck ladles, turn-tables, T-rails, etc. It also contains a description of the various Sturtevant systems, such as heating and ventilating, special ventilating, drying, conveying and mechanical draft systems.

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Chilian Navy	26,500	"
Argentine Navy	13,000	"
The "Messageries Maritimes" Company	87,600	"
Chemins de fer de l'Ouest: (The French Western Railway Co.) Steamships plying between Dieppe and Newhaven	18,500	"
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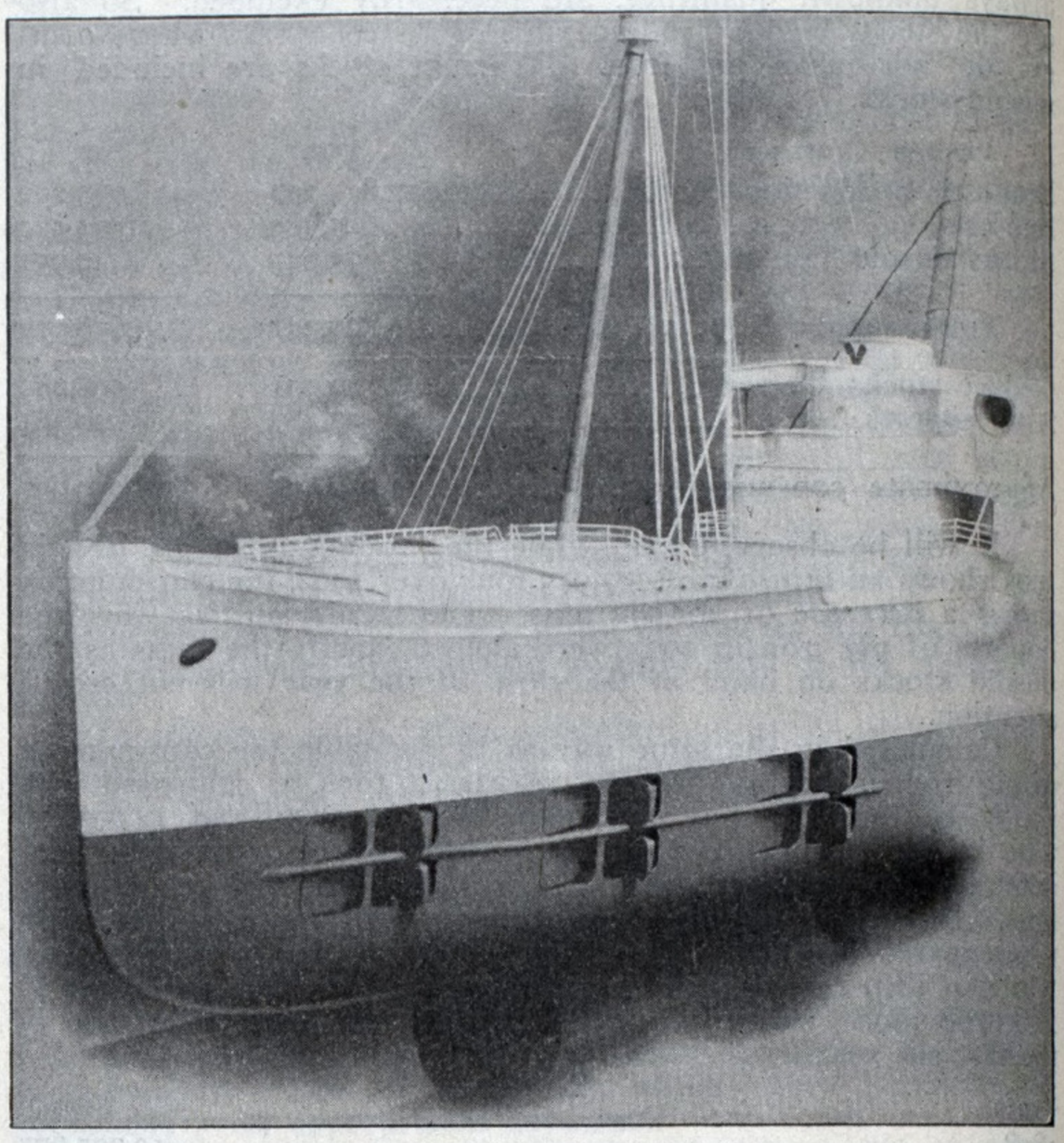
PATENT SHIP'S BRAKE

Liverpool, Feb 11.—A good deal of attention is being given in Liverpool shipping circles to an invention of Mr. Henry Simpson for rapidly checking the way on a ship, which is very properly described as a ship's brake. A model of a ship is being exhibited on the Shipping Exchange for the purpose of illustrating the working of the patent, and the advantages it possesses of more quickly stopping steamers. The patentee states that the object of the invention is to meet the want which has arisen, and in the near future will be much felt, of some method of quickly stopping a steamer's way to avoid stranding or collision. A syndicate is being formed to acquire and fit up a small steamer about 70 ft. long for the purpose of demonstrating on a commercial scale the efficiency of the brake. The apparatus consists of several pairs of buoyant wings or vanes worked horizontally in suitable chambers, one behind the other, on each side of the bow of the vessel below the water line, the arrangement being symmetrical with respect to the center line of the vessel. A hinged and buoyant door is placed before each vane to admit a free flow of water when the brake is in operation. The total length of the vanes is about equal to the ship's beam, and their breadth is about equal to half the ship's draught. The number, positions, and proportions of the vanes may be modified as desired. The "arresters" are so constructed that they loosely fit and fill up the openings, so that when the apparatus is not in use, the external appearance of the bow, and the resistence to its passing through the water, are similar to that of a vessel not so fitted. The vanes are triangular in form and are attached at their centers to vertical spindles, so that all can be freely revolved for about a quarter of a circle until their faces lie at right angles to the center line of the vessel. Large flat surfaces are thus opposed to the water, and present a very great resistance to the passage of the vessel through it, and being almost balanced in all positions. The brake may be put in action, or out of action, when the vessel is going full speed. The revolution of the vanes is accomplished by means of levers or cranks, and can be operated in any direction from the bridge or elsewhere as desired. One movement of the hand may put the brake in action, or two levers may be provided, one controlling the port, and the other the starboard side. The strength of the bow lost at the openings is compensated for by introducing strong steel decks, both above and below, as well as between the vanes. The total resistance may be taken as about one thousand tons on a 25-knot steamship of 70-ft. beam. The structural strength of the brake is such that it would carry a much greater load than this with safety. When the brake is in use, the water flows freely around and behind each vane or arrester, thus insuring efficiency of action. The apparatus can be brought into action instantly, while a vessel is going at full speed, and being entirely independent of the main engines, can be made to act with maximum efficiency some time before it would be possible to reverse the main engines. Either port or starboard brakes may be put in action, and prove of great assistance in steering quickly in case of emergency, or when the vessel is going dead slow, and does not readily answer her helm. The invention is claimed to possess the following advantages: Buoyancy of working parts, great strength of structure, great power of resistance, ship's lines not altered, ease of working when the vessel is going at full speed, no jerk or shock when used, and under immediate control of the commander from the bridge. It is calculated that a vessel fitted with the brake would slow in one length, and stop in about two lengths. It is also claimed for this ship's brake that it would save the main engines from being injured by sudden strains in reversing, prevent many strandings and collisions, save much life and valuable property, reduce risks and with them the insurance premiums, and lead to greater confidence in and patronage of vessels so fitted.



Patent Ship's Brake.

Mr. P. H. Wilhelm, formerly representing the New York Car Coupler Co., Washburn Car Coupler Co., The Buckeye Malleable Iron & Coupler Co., The Railroad Supply Co. of Chicago, with headquarters at Atlanta, Ga., has accepted a position as railroad representative of the American Steam Gauge & Valve Mfg. Co., Boston, Mass., with branch offices at New York, Chicago, Philadelphia and Atlanta, Ga. Mr. Wilhelm has spent the greater portion of his life in the actual railroad service and it will be remembered that, in 1893, he was, on the recommendation of the majority of the railroads, appointed division superintendent of transportation at the world's fair in Chicago. After the close of that exposition he took up the active business of railroad supplies, which he has followed up to the present time. Mr. Wilhelm has been very prominently mentioned for the position of superintendent of transportation at the St. Louis exposition, but prefers to remain in the active railroad supply business. The American Steam Gauge & Valve Mfg. Co. now have the largest plant in the country devoted to the manufacture of steam and and other gauges, safety valves, steam engine indicators, whistles and steam supplies in general, and, being the oldest house in this conutry in their particular line, Mr. Wilhelm will certainly be able to keep up his reputation of representing one of the best houses in the country.

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